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Railway Age

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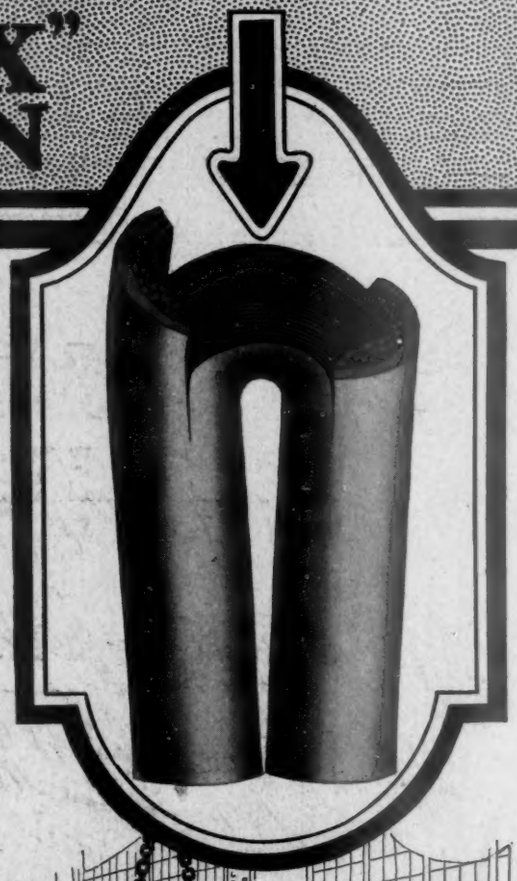
The Nick and Bend Test
applied to "H.B." and "AJAX" IRON CHAIN



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Ductility that will absorb shock loads when used upon Wrecking Units; and

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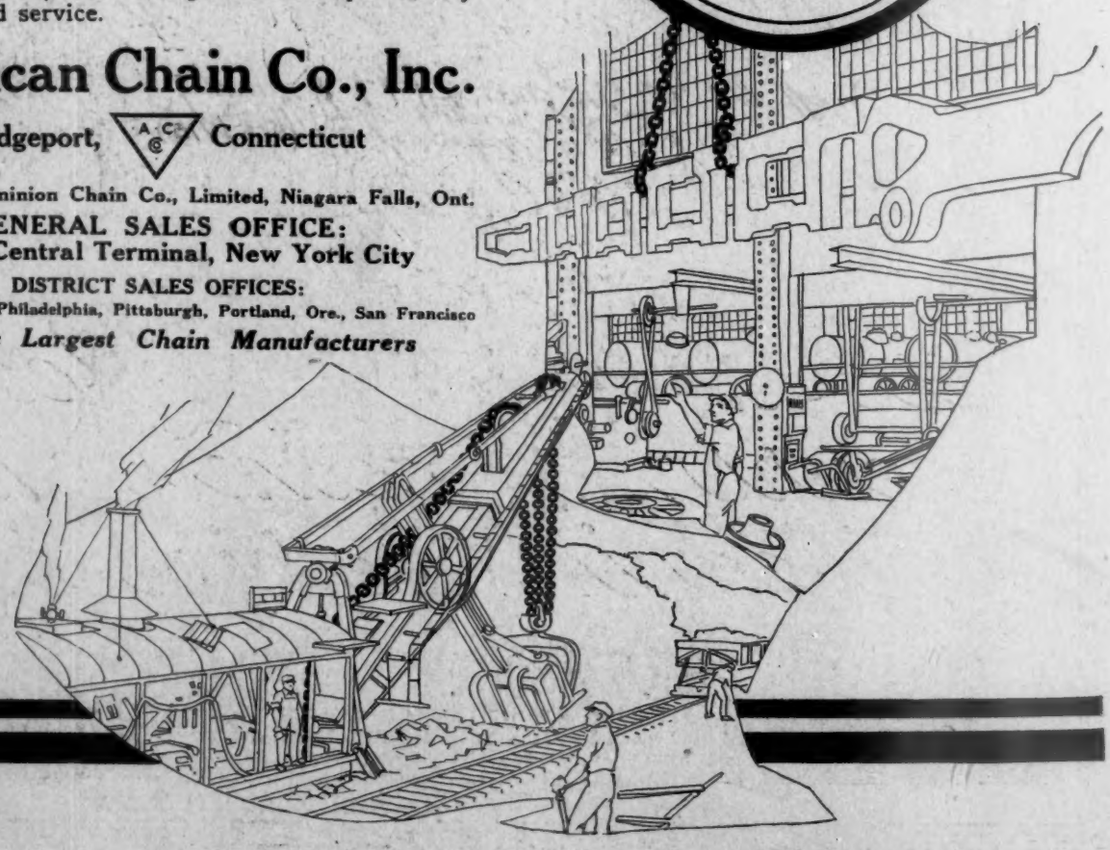

EDITORIAL

Railway Age

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Railroad grade crossing accidents and deaths resulting therefrom are increasing from year to year at an appalling rate.

"Arouse the Public"

Statistics of the Interstate Commerce Commission for 1919 show that 6,400 people were killed or injured in such accidents during that year and that of this number 4,790, or about 75 per cent, resulted from collisions between trains and automobiles. On the Atchison, Topeka & Santa Fe lines east of Albuquerque, N. M., the number of crossing accidents in 1920 was a little over 20 per cent greater than in 1919. The Baltimore & Ohio, in a check made during the month of April, 1921, at its crossings in Chicago, found 550 instances where drivers of automobiles, in crossing the tracks, failed entirely to either look, listen, or take any other precautions to avoid being struck by a train. Such is the condition over the entire country. The problem confronting the railroads is to devise some way to arouse the public to this situation. The Chicago, Burlington & Quincy, Illinois Central and other roads have inaugurated campaigns to eliminate crossing accidents in which they have gone direct to the newspapers in the territory served by their lines, supplying them with data and articles which the papers are carrying to their readers. This is the most effective method that can be used to give the public the education on the subject that it needs.

One of the most serious blows at efficiency of operation for which the Railroad Administration is responsible was the abolition of piece work. By this step all labor was reduced to a level and incentive for special effort was removed. While piece work had received its widest application in the mechanical department, it was also receiving serious consideration from maintenance officers when the roads were taken over by the government. It had long been maintained by many maintenance of way officers that their work did not lend itself to standardization of operations to such an extent that standard schedules could be prepared. They pointed out the differences in local conditions, the variations due to interference from traffic, etc., which affected the output of their gangs. However, as pointed out in an article in another column, these objections have been found to be more imaginary than real on at least two railways which had adopted piece work systems for maintenance of way work on an extensive scale, on one of which it was in effect for upward of six years. It was found from extended experience that there was surprising uniformity in the performance of gangs in different territories and that the effect of local conditions was far less than had been supposed. It was also found that from 75 per cent to 90 per cent of all of the work ordinarily done by maintenance forces could be scheduled. Records for an extended period demonstrated that the men can earn bonuses and that bonuses did afford an incentive for many of the gangs, the bonus payment on one road averaging over $15,000 per month or about five per cent of the total payroll of the force concerned. The maintenance of way department has long suffered from the flat rate paid to experienced and inexperienced employees alike which in effect denies recognition of the value of experience and skill. The bonus system offered a means of rewarding special industry, skill and experience and thereby creates an incentive for the men to exert themselves and to remain in the service as they become more proficient. Some incentive of this character is necessary if the railways are to increase the efficiency of their operations.

Restoration of the Incentive

A British correspondent at Valparaiso, Chile, has written in exulting terms in an important London weekly telling of the offer of credit by an English financial house for the construction of a new railway line, better than the present one, from Valparaiso, Chile, to Santiago. The financiers stipulate, he says, that the work of construction must be done by a British firm. The correspondent indicates, furthermore, that the terms of this offer, which will run upwards of $15,000,000, are much more liberal as to security and interest than American bankers are generally disposed to grant. This is the most important evidence thus far that Britain is making progress in regaining her old supremacy in South American railway markets and the spectacle is not one which indicates any particular competitive strength of Americans in that field. A long term credit overcomes the temporary barrier of adverse exchange rates. There is no good reason why British investment funds should be more readily available for such purposes than our own—in fact the contrary might well be expected. At any rate, there is slight chance of a return to normal in our world trade until American investors are attracted in important numbers to foreign credits. In March last year, our exports were valued at almost a billion dollars. In March of this year they had fallen to $384,000,000. When these figures are understood it is not necessary to go much farther to find one of the primary causes for business depression in this country.

Britain Scores in Chile

In the minds of a goodly proportion of the people, public utilities commissions can have but one function—to reduce rates. As long as the regulatory bodies fulfilled this prerogative in good measure they were popular, but when, as a consequence of the decreased value of the dollar, it became necessary to raise rates, the popular acclaim for the state commission was overwhelmed by the cry for "home rule." As a consequence, bills have been introduced in many of the legislatures calling for the abolition of the commission or providing for the tinkering of public utility laws which promise to do serious harm, unless the resultant reduction in the effectiveness of state regulation will serve to strengthen the arm of the Interstate Commerce Commission. As an illustration of present tendencies, House Bill No. 741 now before the Illinois legislature proposes to wipe the slate clean and provide an entirely new commission, completely under the control of the party in power. It provides definitely for independent utility regulation by any city or "transportation district" which may desire "home rule", such regulation to be exercised by the city council or any other body designated. That the framers

Regulation Is Dead, Long Live Regulation

of this bill have been prompted entirely by political expediency is plain in every line of the act as drawn. It is politics from start to finish. Even the pass privilege to state officers, which died so hard in Illinois, would be restored under this act, while arrangements for complete circumvention of civil service, and for a larger personnel, increased salaries and a tenure of service for commissioners coincident with the gubernatorial term would provide fat picking for the politicians in power. All that has been done in many years to reduce the politics and increase the fairness and efficiency in regulation of public utilities would speedily be undone.

Permanence in Railway Construction

In a period like that of the past few years and which will probably continue for a time, operating, engineering and maintenance officers have an opportunity to realize the advantages of farsightedness in permanent roadway construction. The roads which adopted the policy of securing permanency in bridges, buildings and other structures in the more prosperous days previous to the war and at the same time attempted to follow, as nearly as possible, the same standards in their track, now have much to be thankful for. While such roads may now show deterioration when compared to their own previous standards, they are still well above the general average just as they have been in the past and just as they will be no doubt in the future. Lines of dense traffic which were laid with heavy rail on tie-plates and creosoted ties are now reaping the benefit of their efforts, for such tracks can still be maintained to fair standards at an expenditure, small compared with that which would be necessary if it were not for those improvements. Roads with concrete and other types of permanent structures are worrying little about where the money for renewals or reconstruction can be found because there is little or none to be done. Roads that have made similar expenditures for permanent track construction are not spending anywhere near the amount of money for this class of work that must be expended on other roads because of the lack of permanence in their construction methods. Permanent construction pays in both good and bad times, but is most appreciated in the latter. It is a policy which cannot be carried out all at once, but the benefits of which will assume considerable proportions in a short time if a little toward that end is done each year. The saying "Do well what you do" may be trite but it is still good advice nevertheless.

Engine Truck and Tender Wheel Drop Pits

Since there is a wide diversity of opinion among railroad men regarding many questions of engine terminal design and operation, it is not surprising to find a lack of agreement on the proper location and construction of engine truck and tender wheel drop pits. The need for such pits, however, is acknowledged by a large majority of railroad men who admit that the number now installed is entirely inadequate. Some of the roads reporting to the American Railway Association Committee on Engine Terminals recommended the installation of separate drop pits to handle tender wheels, while others felt that a single pit should serve for both engine truck and tender wheels. Whatever the decision as to number and location, these drop pits should now be installed to suit local conditions and in accordance with the best judgment of mechanical officers in charge. The advantages of auxiliary drop pits are numerous. Heavy locomotive front ends will not have to be jacked up to remove the trucks and change defective wheels. If a pair of tender wheels develops flat spots or chipped flanges, if a journal is cut or a journal box broken, the wheels can be readily changed without jacking up the tender. If the defective wheels happen to be in the front truck, the drop pit eliminates cutting the tender, disconnecting the drawbar, safety bars, air and steam lines and automatic stoker connections when the locomotive is stoker fired. A large amount of manual work is thus saved and the locomotive is returned to service quickly. The installation of suitable drop pits to facilitate the ready changing of engine truck and tender wheels will pay large returns on the comparatively small investment involved due to three facts. First, and most important, the locomotive will be held out of service a shorter length of time; second, the actual cost of changing the wheels will be reduced due to the shorter time and less manual work involved; and third, if wheels can be changed easily, minor defects will be immediately repaired and the general standard of engine truck and tender wheel maintenance raised.

The Reduction in Railway Wages

THE ANNOUNCEMENT of the Railroad Labor Board on June 1 regarding reductions in wages to be put in effect on July 1 shows what the board intends to do regarding the entire subject of wages. In the cases of the railways that are technically before it, it has granted reductions averaging about 12 per cent. It intends to make corresponding reductions on all other railways as they apply for them. The largest reduction is in the wages of section men, who are unskilled workers, and who are reduced 18 per cent, or from a daily basis of $3.70 to $3.02. This puts section labor back where it was before the wage award on July 20, 1920, but leaves its wages averaging almost 38 cents an hour, which is more than is being paid in most other industries.

Most of the reductions in wages amount to about nine per cent, including those of employees performing such widely varying duties as machinists, carmen, switchmen and yard foremen. The reduction in the wages of passenger locomotive engineers is only about seven per cent. The advance in wages granted by the Labor Board last July ran at the rate of almost $775,000,000 a year, or an average of 22 per cent, while on the basis of the same number of men who were employed in 1920 the reductions now announced amount to something over $400,000,000, or an average of about 12 per cent.

The decision should be satisfactory to the employees. It cannot be received with satisfaction by the railways. The reductions which have occurred in the cost of living and in the wages paid in other industries since the present wages were fixed would have justified a larger reduction in railway wages. The decision leaves the railways and the Interstate Commerce Commission in an unhappy position. The public believes that a large reduction in railway expenses will result from the decision of the Labor Board announcing the abrogation of the national agreements. It has given little consideration to the fact that the Labor Board specifically recognized the principle of the eight-hour day, thereby rendering impracticable a large part of the savings the railways estimated could be made by abrogation of the national agreements. Furthermore, the public does not understand that all the remaining points involved in the national agreements controversy are still unsettled. Although the Labor Board has ordered abrogation of the national agreements, the representatives of the labor unions on individual railways, under instructions from their national officers, are demanding the retention of practically every rule in the national agreements. Their purpose apparently is to throw the entire controversy back into the hands of the Labor Board. At any rate, the Labor Board's decision regarding national agreements has thus far settled nothing and there-

fore nobody knows what savings, if any, it finally will cause. Not only, however, does the public apparently believe that large reductions in expenses have been made certain by the national agreements' decision, but in addition it now receives news of a reduction in wages which to it seems large, but which really will reduce the excessive operating expenses of the railways only by about seven per cent.

With the public being led to believe that very large reductions in operating expenses are in sight there is going on an extensive agitation for large reductions in freight rates. The reductions in operating expenses that are in sight are not sufficient to justify substantial reductions in rates. Even when the railways in the last four months of 1920 were handling a large business they were failing at the rate of about $500,000,000 a year to earn an annual net return at the rate of six per cent on their valuation. Since the big slump in business began they have been earning almost no net return at all. In the face of these facts it is plain that if the railways are to be set upon their feet financially, and enabled to put their properties in good shape again and increase their facilities sufficiently to handle the country's traffic when business revives, substantial reductions of rates must be indefinitely postponed. A general reduction of even eight and one half per cent in freight rates alone would reduce the earnings of the railways as much as the entire reduction in wages granted will reduce their expenses. This would leave them as badly off as they would be without any reduction of wages, and would not satisfy any of those who are agitating for a large reduction in rates.

The things the country will need most from the railways in the immediate future are, first, improvements in the physical properties which will enable the roads to handle the traffic that will be offered when business revives, and, secondly, readjustments in rates which will eliminate discriminations and inconsistencies resulting from the horizontal advances which have been made and the reduction of such rates as can be shown to be actually hindering or preventing the movement of traffic. The rehabilitation and expansion of the properties necessary to enable the roads to give good and adequate service cannot be secured unless the roads are allowed to earn larger net returns, and they cannot do this if any considerable general reductions in rates are to be made in the near future. As to the readjustments needed, testimony presented to the Senate Committee on Interstate Commerce shows that these are in process of being made now. The general tendency of rates should be, and will be, downward in future, but the decision of the Labor Board precludes any substantial general reductions in the near future.

A Bad Freight Car Situation

In 1917 there were in service on the Class I railways of the United States 2,479,500 freight cars, the largest number owned in the history of the railroads. Since that time each succeeding year has seen a decline in the number of freight cars. There were 81,600 less in service in 1918 than in 1917 and 36,800 less in 1919 than in 1918. In 1920 there was a further decrease of 8,200 cars. In 1918 and 1919 the average capacity increased from 41.5 tons to 41.6 and 41.9 tons respectively. Each year, therefore, marked a decrease over the preceding year in the aggregate tonnage capacity as well as in the number of cars. In 1920 the average capacity had increased to 43 tons so that in spite of a decrease of over 8.000 in the number of cars, there was a material increase in the aggregate tonnage capacity, which, however, was still considerably less than in 1917.

From these facts two conclusions are inevitable: First, that the cars ordered by the Railroad Administration in 1918 and 1919 were entirely inadequate, both in number and in aggregate capacity, to replace those retired during those two years, and second, that the railroad companies have vigorously attacked the problem of restoring the country's freight car resources during the short period since the properties were returned to them for management.

But, notwithstanding the manner in which the tide of depression has been stemmed, the condition of the equipment at the present time is a matter of grave concern to railway managements and the shipping public alike. Of the 2,479,500 freight cars in service in 1917, about 5.7 per cent, or 141,300, were in bad order when the railroads entered the period of federal control on January 1, 1918, leaving 2,338,200 freight cars in condition for actual service. On May 1 of this year, according to the semi-monthly report of the Car Service Division, there were 310,000 freight cars in bad order out of a total of 2,352,900 cars, leaving 2,042,900 freight cars in serviceable condition. At present, therefore, the Class I roads have over 295,000 less cars fit for actual service than they had at the beginning of government control. Furthermore, during 1918 the number of bad order cars requiring heavy repairs varied from 85,000 to 96,000 and constituted from 50 to 60 per cent of the total number of bad order cars. Of the 310,000 cars now in bad order, 228,200, or 74 per cent, are in need of heavy repairs.

In 1917 the railroads handled the largest volume of traffic in their history up to that time, but under conditions which clearly indicated the need for more cars. The year 1920 again broke all records for the volume of traffic and this business was handled with about 160,000 less cars actually in condition for service than were available in 1917. This accomplishment marked the highest effectiveness ever attained in the utilization of freight cars, but it was attained by the adoption of some methods to the permanency of which the shipping public could hardly be expected to agree. It is improbable that equal effectiveness, not to mention a further increase, can be maintained indefinitely.

The railroads now face a revival of business. Since the last week in March, when car loadings reached their lowest point with the exception of one other full week during the year, there has been a steady increase in car loadings, which increase for the week ending May 14, amounted to 12.5 per cent in a period of six weeks. The movement of coal is increasing and must continue to do so if the country is to catch up on the winter's supply. With the grain harvest approaching, there is an unusually large amount of last year's crop still to be moved and already in some localities it is becoming difficult to meet the demand for grain carrying cars.

With prospects of an accelerating business revival the railroads have about 134,000 fewer cars immediately fit for service than were available during the period of heavy traffic last year. To handle a volume of traffic approaching that of the late summer and early fall of last year under these conditions would require a new record in car mileage and car loading, which would be accompanied by car shortages, forced car distribution and embargoes—expensive alike to the railroad and the shipper.

In order to restore the number of cars fit for service to last year's figure, the number of bad order cars must be reduced by 134,000 and this reduction must come very largely from the 228,000 cars requiring heavy repairs. Under normal conditions the daily output of repaired cars will probably average 10 per cent heavy repairs and 90 per cent light repairs and it is evident that if no move is made to clear up the present abnormal accumulation of heavy repair work until there is again a demand for cars, the accumulation will be reduced with difficulty and only at the expense of inadequate attention to much of the equipment. This accumulation of bad order cars is one of the results of the bitterest struggle for corporate existence that railway managements have ever had to face and for many of them the end of the

period of stress is not yet in sight. Others, however, are in a position to anticipate a reasonably certain improvement in business conditions and such roads should immediately bend every effort to the task of restoring their idle equipment to a fit condition for effective service.

But the burden of meeting the demands of reviving business does not rest with the railroads alone. Shippers must in a measure share the responsibility. It is a practical impossibility to provide a supply of freight cars or of other essential facilities large enough to handle all of the business offered when a year's requirements of the country are crowded into a few months. Like any other machine the capacity of the railroads is limited and output can best be secured by steady operation. For his own advantage, therefore, every shipper and every receiver of freight in a position to anticipate the revival of normal business activities should make the fullest possible immediate use of the railroads, thus saving himself delay and uncertainty later. At the same time he will assist in relieving the congestion at the inevitable peak of traffic which is to come, besides supplying the revenues so essential for the immediate adoption of a vigorous policy of equipment rehabilitation by the railroads as a whole.

Chicago, St. Paul, Minneapolis & Omaha

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA operates 1,749 miles of railway, of which it owns all but 70 miles operated under trackage rights. This mileage lies principally in Wisconsin, Minnesota and Nebraska, but the lines extend also into Iowa and South Dakota. The property is controlled by the Chicago & North Western through majority stock ownership of the preferred and common stock. Inasmuch as it is related to the North Western, although operated separately, our discussion of the annual report can be brief, for much that has been said about the North Western applies also to the Omaha.

Taking into consideration the standard return for January and February, the guaranty for the guaranty period and the net railway operating income for the remaining four months of the year, the operations of the Omaha in 1920 permitted that road to earn a surplus, after the payment of 7 per cent on the preferred stock and 5 per cent on the common stock, of $871,684. This compares with $660,732 in 1919, when the property was under federal control. It was considerably in excess of the surplus earned in 1917, the last year prior to federal control, when after the payment of the same dividends the surplus was $402,603. It by no means rivaled, however, the figure for 1916, when there was a surplus of $1,627,754 after the payment of 7 per cent dividends on both the common and preferred stocks.

The business done by the Omaha in 1920 was in excess of that in 1919. The traffic handled in the first eight months of the year was in excess of that handled in the corresponding months of 1919. In the last four months, however, the traffic handled was less than in the corresponding months of 1919. October, 1920, was the best month of the year, but there was not as much traffic handled in that month as in October, 1919. After October the traffic fell off rapidly and the December, 1920, and January, 1921, figures were the lowest for some time. It was presumably the large amount of traffic handled in October and the fairly high average for September that gave the road a net railway operating income sufficient for it to better its 1919 earnings. The falling off in traffic after these months is the familiar example of a railroad being unable to realize on the increases in rates established in August to compensate for increases in labor costs.

In the review of the Chicago & North Western's report, which appears in these columns this week, there was extended comment on the fact that the operations of the North Western and Omaha were characterized by train loads and figures of car utilization below the averages for neighbor roads. It is hardly necessary to repeat what has already been said about the North Western in these brief comments concerning the Omaha. Nevertheless, it is of interest to observe that although the Omaha had in 1920 an average of net tons per train—revenue and non-revenue freight—of 448, it has been making steady increases in its train load over a period of years. The average of net tons per train in 1920, that is 448, compared with 459 in 1919, but it represented increases over the figures of 429 in 1917; 414 in 1916; 360 in 1915; 331 in 1914, etc.

It would appear, nevertheless, that the Omaha has not gone after heavy train loading in quite the fashion which has characterized the operations of many other roads. The Omaha succeeded in 1920 in getting an average load per loaded car of 23.9 tons; the average car miles per day were 22.2 and the ton-miles daily per car were 393. The first of these three figures was the same as in 1919, the latter two represented increases over 1919.

The following gives the figures for operation in 1920 as compared with those for 1919:

	1920	1919
Mileage operated	1,749	1,749
Freight revenue	$20,845,728	$18,335,828
Passenger revenue	8,272,351	7,589,842
Total operating revenue	31,911,606	27,732,018
Maintenance of way expenses	4,907,551	3,838,174
Maintenance of equipment	6,273,265	5,230,102
Traffic expenses	380,648	265,361
Transportation expenses	15,251,523	13,079,739
Total operating expenses	27,957,338	23,316,464
Net from railway operations	3,954,267	4,415,653
Taxes	1,568,349	1,309,002
Net railway operating income	2,420,322	2,677,245

The foregoing figures are not given in the report, but are taken from the December, 1920, monthly report to the Interstate Commerce Commission.

The corporate income account is given in brief as follows:

	1920	1919
Standard return	.....	$4,934,790
Compensation, January and February	$815,603	.....
Net railway operating income, March 1 to December 31	1,335,388	.....
Due on guaranty	2,740,197	.....
Gross income	5,075,879	5,031,160
Net income	2,587,670	2,376,718
Dividends—		
Preferred, 7 per cent	788,151	788,151
Common, 5 per cent	927,835	927,835
Balance income for year	$871,684	$660,732

Chicago & North Western

THE CHICAGO & NORTH WESTERN is another of that large number of railroads which in 1920 did a record business but which were unable, because of increased costs of operation, to reflect that fact in net earnings. The corporate income account for 1920 showed gross income amounting to $23,811,563 after the accrual of dividend income, etc.; the compensation for the first two months of the year while the property was still under federal control, and the guaranty for the following six months, as compared with gross income in 1919 amounted to $24,140,709. The net income after the payment of interest, etc., was $12,545,856 in 1920 and in 1919, $14,088,104. In June, 1920, because of the uncertainties in the railway situation at the time, the company reduced its dividend on the preferred stock from 8 to 7 per cent and on the common stock from 7 to 5 per cent, thereby reducing the dividend payments in the amount of $3,127,000 as between the two years. The net for 1920, therefore, was $3,633,979 as compared with $2,030,307 in 1919.

The trend of the amount of traffic handled on the North Western in 1920 was fairly typical of that on the railways of the country as a whole. The road did more business in every month of 1920 than in the corresponding months of 1919 with the single exception of April, when the outlaw strikes

cut down the ton-miles handled about one half from March. The month of September was the best for the entire year, but after that month the traffic decreased rapidly, thereby preventing the road from realizing on the increases in rates which were granted to offset the increases in labor and other costs.

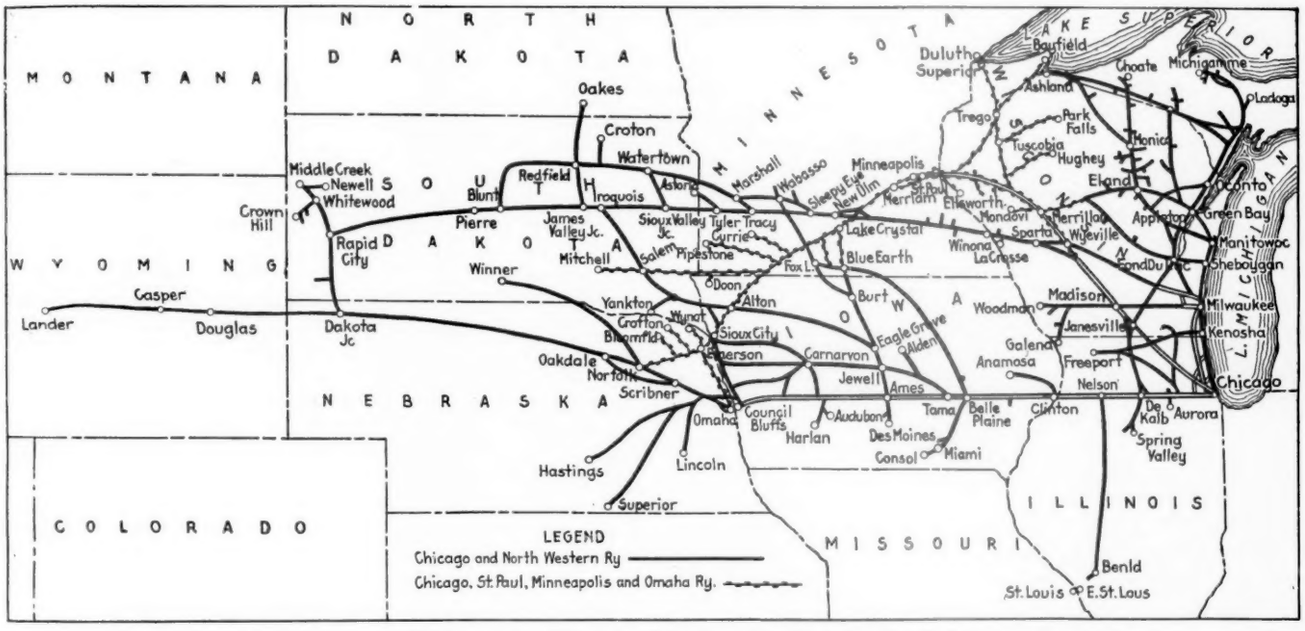
Another interesting feature of the year's developments was a rather marked change in the traffic handled. This change is shown in the following table:

	1920 Revenue tons	1920 Per cent of total	1919 Per cent of total	Per cent increase or decrease in number of tons
Products of agriculture.	$7,744,549	12.85	16.36	—8.94
Products of animals....	2,333,186	3.87	5.69	—21.15
Products of mines.....	29,598,508	49.10	41.49	37.24
Products of forests.....	6,883,662	11.42	12.62	4.96
Manufactures	10,650,551	17.67	16.91	21.20
Total, including misc. and l. c. l.....	60,275,207	100.00	100.00	15.96
Bituminous coal.....	10,254,478	17.01	13.03	51.35
Ores	14,338,669	23.79	18.99	45.26

The total tons of revenue freight carried in 1920 were 60,275,207, as compared with 51,981,263 in 1919, an increase of 15.96 per cent. The table points out that this increase was made up principally from increases in the tonnage of bituminous coal and ores, whereas there was a decided decrease in farm products. The tonnage of bituminous coal increased as between the two years in the amount of 51 per cent, that of ores 45 per cent and in products of mines in general 37 per cent. There was also an increase in manufactures of 21 per cent. With the decrease in products of agriculture, amounting to 8.94 per cent, and in products of animals amounting to 21 per cent, the final result was that products of mines, which in 1919 made up but 41.49 per cent of the total traffic, in 1920 made up 49.10 per cent. The manner in which the wheat growers held back their wheat for higher prices during the latter part of 1920 received no small amount of attention at the time. The rather striking result of holding back the farm products on the traffic of an important system is, nevertheless, of more than passing interest.

The Chicago & North Western now operates 8,402 miles of line extending over nine states. Of this total mileage it owns 8,329 and operates 73 under trackage rights. This figure of miles operated is a considerable increase over that operated in 1919, in which year the total miles of line were 8,090. The increase in mileage is not due to any extension of the system; it is due to the acquiring last April by the parent company of various proprietary companies which formerly were controlled by entire ownership of capital stock and, in some cases, also leased. The lines acquired were 11 in number, the more important of which were: The Wyoming & Northwestern from Casper, Wyo., to Lander, 148 miles; the Pierre, Rapid City & North Western, Fort Pierre, S. Dak., to Rapid City, 164 miles; the Belle Fourche Valley, Belle Fourche, S. Dak., to Newell, 24 miles, and the James River Valley & North Western, Blunt, S. Dak., to Gettysburg, 40 miles. The result of these changes is that the North Western is now a completely knit system consisting entirely of mileage which it owns. The savings in the way of accounting and records from this change will probably be considerable.

The North Western's lines traverse a prosperous territory, from which it derives a traffic of large volume and varied character. The property is characterized by high standards



The Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha

Nevertheless, it will have to be admitted that the North Western has apparently been a bit more conservative in matters of operation than some of its neighbors. With a tonnage of coal aggregating 13 to 17 per cent of the total tonnage, ores 19 to 24 per cent, or, of products of mines as a whole, 41 to 49 per cent, it might be expected that the revenue train load would have reached a high average. This, however, is not the case. It should be clearly recognized in comparing the average train load of the North Western with that of maintenance and construction. It is well regarded by shippers and the service given is generally recognized as satisfactory. The company is rather noted for its conservatism. This was shown in 1920 in the decision to reduce the dividend on both the common and preferred stock. Other writers have also called the North Western conservative because it has not sought to build or obtain a connection to the Pacific Coast, such as the Chicago, Milwaukee & St. Paul obtained by building its Puget Sound extension, or the Chicago, Burlington & Quincy was given by its being acquired by the Hill lines. However, this view does not appear to have much weight, particularly in view of the relationships of the North Western with the Union Pacific.

of other roads in the same territory that the comparatively small increases in its train load have been due to the policy consistently followed by the management in developing the property and based upon the belief that the public is better served by operating comparatively light trains at relatively high speeds than by operating tonnage trains at low speeds. The North Western is well equipped in the way of motive power as far as the number of locomotives and their condition is concerned. It has not, however, gone in for heavy power. For example, it received from the Railroad Administration 35 six-wheel switching locomotives, but no heavy freight engines. In 1920 it placed orders for 40 heavy freight locomotives; these were Mikado locomotives with a total weight in working order of 302,000 lb. and similar to those which were ordered in 1917. By way of comparison, it should be noted that the U. S. R. A. standard heavy Mikado has a total weight of 322,000 lb. The average revenue train load on the North Western in 1920 was 452 tons. For purposes of comparison, however, one must use the figure of net tons per train—revenue and non-revenue combined. In 1920 this was 552 tons. This compared with 530 tons in 1919, but 1919 was a low year in this respect, for in 1917 the net tons per train were 544. The figure for 1917 represented, it is true, an increase over 1915 and 1916, but it is nevertheless significant that there should have been an increase of but eight tons in the net tons per train as between the averages of 1917 and 1920.

Further than that, it also develops that despite its opportunities for heavy train loading, the North Western, besides not having made much progress in the past three years, is operating with train loads that are considerably below those of its neighbors in the same or adjoining territory. Thus, the net tons per train in 1920 were for the Burlington, 766; Great Western, 629; St. Paul, 631.

Other figures that are usually regarded as indicating the efficiency of a road's operations are the tons per loaded car, the car miles per day and the ton-miles daily per car. The North Western in 1920 had a figure of tons per loaded car of 26.3 as compared with 24.0 in 1919. This is a good figure and rather better than the average for the roads whose train loads were mentioned above. The figure of car miles per day, averaged in 1920 only 21.5.

Despite what may be said about the North Western's failure or lack of desire to secure a heavy train load, it is still a fact that the North Western has adopted a progressive policy as to the matter of keeping the amount of equipment up to the mark. As has been noted, there were received from the Railroad Administration 35 six-wheel switching locomotives. The North Western was also allocated 3,250 cars, including 1,000 50-ton box, 1,250 40-ton box and 1,000 50-ton composite gondola cars. During 1920 the road placed orders for 40 Mikado and 20 Pacific type locomotives, 500 ore, 500 stock, 250 refrigerator and 50 caboose cars and for 62 passenger train cars. The equipment allocated by the U. S. R. A. was financed through the equipment trust agreement made by the Guaranty Trust Company and the Director General. An application is pending for a loan from the revolving fund to assist in financing the equipment mentioned as ordered in 1920.

The total tons of revenue freight carried by the North Western in 1920, as has already been mentioned, were 60,275,207, an increase of 16 per cent over 1919. The total revenue ton-mileage was 9,559,269,662, an increase of 15 per cent over the figure of 8,294,482,641 in 1919. The average haul was 159 miles. The total number of passengers carried in 1920 was 40,692,627 and the passenger mileage 1,444,559,205, an increase of 2.26 per cent over 1919. The average journey per passenger was 35 miles.

The following gives the figures for operation in 1920 as compared with 1919:

	1920	1919
Mileage operated	8,298	8,090
Freight revenue	$110,500,758	$92,084,614
Passenger revenue	37,386,603	35,213,606
Total operating revenue	165,692,399	139,589,915
Maintenance of way expenses	*25,084,856	20,696,215
Maintenance of equipment	*32,889,502	29,687,410
Traffic expenses	*1,303,661	879,110
Transportation expenses	*65,898,448	64,202,497
Total operating expenses	157,110,200	119,579,387
Net from railway operations	8,582,199	20,010,528

*Only ten months' figures are given.

The corporate income account is as follows:

	1920	1919
Accrued compensation	.....	$23,201,016
Compensation, January and February	$3,803,000	.....
Guaranty March 1 to August 31	16,509,185	.....
Net railway operating income, September 1 to December 31	669,652	.....
Gross income	23,811,563	24,140,709
Net income	12,545,857	14,088,105
Dividends—		
Preferred (8 per cent in 1919; 7 per cent in 1920)	1,567,650	1,791,600
Common (7 per cent in 1919; 5 per cent in 1920)	7,257,625	10,160,675
Balance income	3,633,979	2,030,307

New Books

Economic Development of the United States. By Isaac Lippincott, 5½ in. by 8½ in., 691 pages. Published by D. Appleton & Co., New York.

This work brings the economic history of the United States through the war and up to date. In addition it has the advantage of being a rather thorough treatment confined within the limits of one volume which is not ponderous enough to be the source of much discouragement to the casual reader. The author has endeavored, as he announces in the preface, to give not only the bare economic aspects of American history but to develop the successive events and correlate them as causes and effects—"to present a complete and continuous picture of growing industrial society." Novelty is not a characteristic of economic phenomena. Each situation which arises has, of course, certain aspects which are novel but, in the main, almost any problem in economics which ever presents itself for solution is essentially analogous to one which has arisen and been solved before. True, the study of economic history does not always tell us just how we should solve our present problems, but, if it does not do this, it will generally tell us how *not* to attempt a solution, which is quite important. The facts which this work deals with are explained in terms which will present no difficulties to the reader not trained in the terminology of economics.

This work begins, as it should, with an explanation of the relation of economic history to the study of economics. A rather detailed explanation of the natural resources of the country is next given and then the history proper, beginning with the earliest colonization of the country by Europeans. The nationality of the colonists, their occupations and habits of living and the goods produced at that time are dealt with in considerable detail. The history of government finance and price inflation following wars, the history of the tariff and the industrial revolution are subjects treated especially well by Professor Lippincott in this work—which is fortunate since an understanding of these subjects is of particular importance in a time of post-bellum readjustment like the present when our chief economic ills are so strongly accentuated. The author traces carefully the development of practically every important American industry. Railroad history, of course, is not omitted and the growth of the railways, their financial history and the development of government regulation are outlined in the essential details. For a reader whose main interest lies in the railway industry, the work is not, unfortunately, as complete in its consideration of this phase of our economic development as could be wished. The book, however, does not purport to be a railroad history simply, and a broad knowledge of our industrial history is quite as important for railroad men as it is for anyone.

Labor Board Announces Wage Reductions for July 1

Decreases Approximately 12 Per Cent Estimated to Save Class I Carriers $400,000,000 Yearly

WAGE REDUCTIONS approximating 12 per cent were ordered by the Railroad Labor Board in a blanket decision made public on June 1. The effect of this decision if applied to all employees of all Class I roads, it riers approximating $400,000,000 annually. The decreases range from 18 per cent for unskilled maintenance of way labor to 7 per cent for road passenger engineers.

As a result of wage orders issued by the Director General during the period of government control, the wages of railway employees were increased from an average of $78 in December, 1917, to $116 in January, 1920, or about 49 per cent. The Railroad Labor Board handed down a decision effective May 1, 1920, which increased the wages approximately 22 per cent, or to an average of $141 per month. After this latter increase the railway workers were receiving an average increase of 81 per cent more than they were receiving prior to federal control, and about 10 per cent of them, chiefly the lower paid, unskilled workers, had received increases in excess of 100 per cent. General reductions in wages as outlined in the present decision would mean an average monthly wage of about $125 for all employees.

The present decision applies to the various cases which were filed with the Board prior to April 18. On June 6 the Board will hear the arguments on the cases submitted subsequent to April 18 and the decision in these cases will also become effective July 1.

The Labor Board's findings are officially designated as Decision No. 147, New York Central Railroad Company et al. vs. Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, et al. An abstract of the decision follows:

Abstract of Decision No. 147

The United States Railroad Labor Board, acting under authority of the Transportation Act, 1920, and in furtherance of the purpose of said Act, hereby renders a decision upon a series of controversies between the carriers and the representatives of certain employees of the carriers, involving the question of what shall constitute just and reasonable wages. The various controversies were considered in conference between representatives designated and authorized by the parties, and not having been decided in such conference were referred to the Labor Board for hearing and decision.

History of the Controversy

Immediately after the organization of this Board and on April 16, 1920, it received and took over for hearing a dispute that had been pending before what was known as the Bi-partisan Board, between a large number of carriers which had been under government control, including most, if not all, of those now before the Board in these cases, and their employees, which dispute, among other things, involved the question of wages.

After a full hearing and as careful consideration as the time and conditions would allow, the Board in that case (Dockets 1, 2 and 3) rendered its Decision No. 2, awarding certain increases and fixing what it deemed just and reasonable wages at that time for all the classes of employees of all the carriers then before the Board. The Board did not then undertake to, and under the law could not, make that decision a permanent award or standard. That decision or award was accepted in good faith and acted on both by the carriers and their employees parties to that decision; and certain other carriers not formerly parties to that case voluntarily applied and put in force the standard of wages fixed by this Board in its Decision No. 2. That decision was rendered at a period of inflation, rising prices and high costs of living. Since then changes, and in some respects very decided changes, have taken place in business, industrial and financial conditions in the United States, and in a varying measure have affected all industries and the entire public.

We now find ourselves in a period of readjustment to which all interests sooner or later must conform.

Following the raise in wages granted by this Board in Decision No. 2, and to some extent based on that, the Interstate Commerce Commission granted an increase of rates to the carriers which was put in force, but after this there came the inevitable pause in the rising tide of prices and business followed by the like inevitable recession, and in some lines a disastrous fall in prices, and the resulting cutting down of production. This has affected all lines of industrial life all over the United States and produced conditions which have to be met and in whose burdens all have to share.

Confronted by these conditions, the carriers before us, after conferences with the representatives of the different classes of their employees as to a reduction of wages, at which conference there was a failure to reach an agreement, have filed their several complaints and brought their disputes before this Board for a decision as provided by law. The disputes were separately brought; the first being filed by the New York Central Railroad Company on March 19, 1921, followed by numerous other carriers.

Some of the carriers presented disputes applicable only to a few of the classes of their employees; others applicable to nearly all classes of employees.

The Board, appreciating and knowing the general financial and industrial conditions of the country, considered the appeals of some of the carriers for immediate action, and believing that the applications already filed would soon be followed by numerous others, took cognizance of the fact that most of the evidence offered or to be offered in one case would be material and common to all, and that it would be impracticable to reach an early decision in the time at the disposal of the Board if the cases were heard and considered separately, the Board at that time being engaged in hearing other pressing matters, on April 6, 1921, passed a resolution reciting in substance these facts, and that it was desirable that the Board hear at one time and decide in one decision so far as may be possible the question as to what may constitute just and reasonable wages for all the classes of employees of the carriers parties to Decision No. 2, as to whose wages there might be a dispute, and ordered and directed that Monday, April 18, 1921, be set as a date for hearing, at which time the Board would hear representatives of the parties to disputes where applications had been filed, and of other disputes filed at that time between carriers and employees of carriers parties to Decision No. 2, if ready for presentation, and the Board consolidated all the cases for the purpose of hearing and decision so far as practicable.

On the date set the carriers herein named had filed the applications for hearing of disputes with the classes of their employees herein named and set out. The time was limited for the oral hearings to five days for the carriers and five days for the representatives of the employees, but the Board afterwards gave the employees further time to prepare their cases for hearing, and slightly extended the time. Both parties were also allowed to file certain documents in evidence bearing upon the matters in dispute.

The hearings in these cases were completed on May 16, 1921, and the Board has since had the cases before it under consideration.

Pending the hearing which commenced on April 18, and since, a considerable number of the carriers before the Board in that hearing have filed with the Board numerous other cases of disputes with other classes of their employees, and other carriers which had no cases pending before the Board on April 18, have filed cases of disputes, and such cases are still being received. The Board has been impressed with the belief that a reduction of rates of pay on any road applying to some class or classes and not to others, and thus producing inequalities of treatment and a reduction of wages from the standards fixed by and in Decision No. 2 on some roads, without a corresponding reduction on others operating in the same section and under substantially the same conditions, would possibly be productive of unrest, dissatisfaction and

other unfortunate results. It therefore deemed it desirable to render its decision in as many cases and applying to all or as many classes as might come before it at one and the same time and make it effective as of and on the same date. It also deemed it desirable to fix and announce that date in advance so that all parties could in a measure adjust their affairs with that information before them.

With all these things in view, after having considered the evidence heard in the cases before it, the Board on May 17 passed and made public a resolution to the effect that it would announce its decision in these cases on June 1, 1921, to become effective July 1, 1921; and it further decided and announced that it set June 6, 1921, as the date for hearing all other like disputes filed, docketed and ready for hearing at that time, it being the purpose of the Board to make its decision of those disputes then heard effective as of July 1, 1921.

In pursuance of this policy and these orders, it now announces its decision in these consolidated cases already heard.

In the hearing and consideration of these cases there has been available to the Board all the evidence taken and now on file adduced in the hearings of the cases heretofore brought before the Board, information gathered by the Board and its forces under the directions of the statute, including reports of the Interstate Commerce Commission and various other governmental agencies, state and national, in addition to the very voluminous mass of evidence submitted at these hearings by the respective parties, as well as matters of general and universal public knowledge.

As in Decision No. 2, granting increases in wages, the Board found it necessary to assume a known and recognized base and adopted as such base the rates of wages in effect March 1, the date of the termination of federal control; so in this decision the Board assumes as its base the rates fixed and in effect under and by its Decision No. 2.

Except as modified by changed conditions, the preliminary statement set out in and as a part of its Decision No. 2 might well be here repeated, but that is not deemed necessary. Practically the same methods of procedure there outlined were followed in these cases. The Board has been governed by the same principles and the directions of the law as there outlined, and has endeavored to give due consideration to every element of the problem before it.

The decision of the Board is the result of the action of the Board, composed of nine members acting as a body, under the usual parliamentary methods of procedure and its own rules. Each and every separate question was considered and voted upon —each and every rate for each class was voted upon and adopted by a majority vote of the Board, and in every instance one or more of the public group, as the law requires, voted in the affirmative on any classification or rate adopted.

In a problem so complex and involving the inter-relationship of the wages of so many different classes of employees it is obvious that there could not be unanimous agreement among all the members of the Board on all decreases fixed by this decision; but the several decreases hereinafter set forth represent, in each instance, the best judgment of the majority of the Board. This statement is made in order that it may not be inferred that the decision, in all its details, states the precise decrease which any one of the members hereof might have stated if he had the sole power and responsibility for fixing such decrease.

The Board proceeding under the methods outlined, while not attempting to set out all the findings in detail, for the information of the public and those directly interested, may here briefly outline some of its findings which have been considered in reaching the results herein announced.

It finds that since the rendition of its Decision No. 2 there has been a decrease in the cost of living. What that decrease has been it is impossible to state with mathematical accuracy or even what the general average for the United States has been up to and on any given date. The machinery for procuring and stating with accuracy the data to fix this is by no means perfect. The decreases vary greatly according to the locality, and affect different people in different degrees. In some localities the general decrease has been greater than in others. In the cities the general decreases in some lines have been offset to some extent by the high rents. In some of the items or products that enter into the costs of living the fall in prices has been great; in others, much less.

The Board also finds that the scale of wages for similar kinds of work in other industries has in general been decreased. The same conditions are also found as to this element. It is practically impossible to find any exact average line of decrease for the entire country. The decreases vary in different industries and in different localities, and in some instances with different industries, individuals or corporations. In some places and classes the decrease has been heavy; in others, not so great. There has been a decrease, and the tendency is at present downward.

But the most unfortunate condition is that in many localities large numbers are out of employment on account of the prevailing depression, and hence without wages.

On these elements and the others prescribed by statute to be considered, the Board has looked to the general conditions existing and brought to its attention, as well as the evidence offered as to particular localities and carriers.

In a decision of this character it is not practical to fix rates applying with exact ratio to each individual employee and each separate locality, for the reason that necessity compels the Board to accept certain standardizations of pay for railroad employees. But these standards are now somewhat different in different regions, and so the decreases will have relatively the same general effect.

The Board believes that based on these elements shown, i. e., the decreased costs of living and the general decrease in the scale of wages in other industries, that the decreases herein fixed are justified and required.

But the Board is required by the Transportation Act to consider not one, but all of the seven elements especially mentioned in the act, and other relevant circumstances, and this it has endeavored to do in reaching the results herein announced.

It has endeavored to consider as it should all the elements that enter into this complex problem. There are certain facts and conditions known to all and which can neither be disputed nor ignored. Whatever may be said as to the origin or contributing causes, there has been and is a marked, and to some extent distressing and disastrous, depression in business and industry affecting the entire country and some lines of production most seriously. As a result heavy financial losses have been suffered and many hundreds of thousands thrown out of employment and deprived of all wages, and this loss of purchasing power by them has in turn accelerated the general depression by reducing the demand for the products they would otherwise have purchased. While it has been argued that the fall in prices has not reached to any large extent the consumer, it has without question most disastrously reached and affected the producers, especially some lines of manufacture and the agricultural classes.

It should be recognized by all that the problem before us is chiefly an economic one, and we are all confronted by adverse and troublesome conditions which everyone must help to solve. It should not be looked upon as a struggle between capital and labor, or the managements and the employees.

Decision

The Labor Board decides:

1. That the rates of wages heretofore established by the authority of the United States Railroad Labor Board, shall be decreased as hereinafter specified, and that such decreases shall be effective as of July 1, 1921.

2. That the scope of this decision is limited to the carriers named under Article I herein, to such carriers as may be included hereafter by addenda, and to the specific classes of employees named or referred to under each particular carrier.

3. That the reduction in wages hereby authorized shall be made in accordance with the following articles which prescribe the regulations, designate the employees affected, and establish the schedules of decreases.

Article I—Carriers and Employees Affected

Each of the following carriers shall make deductions from the rates of wages heretofore established by the authority of the United States Railroad Labor Board, for the specific classes of its employees named or referred to in this article, in amounts hereinafter specified for such classes in the schedules of decreases; apply the rates of wages established in Section 3 (b) of Article II, and Sections 1, 2, 3 and 4 of Article X; and make effective the rates of wages fixed by differentials provided in Section 4 of Article IV.

The article and section numbers used in connection with a carrier refer to the corresponding article and section numbers in the schedules of decreases, and in determining the classes of employees affected on each carrier the following rules shall govern:

(a) When section numbers are used in connection with a carrier without naming the classes, all classes of employees named in the corresponding section numbers of the schedules of decreases are affected.

(b) When section numbers are used in connection with a carrier and specific classes of employees are named, only the same classes of employees named in the corresponding section numbers of the schedules of decreases are affected.

(c) Where section numbers are omitted in connection with a carrier, the classes of employees named in the corresponding section number of the schedules of decreases are not affected.

[Herewith follows a list arranged alphabetically by railroads, giving the articles and sections of these articles of the decision which apply to the individual roads.]

Article II.—Clerical and Station Forces

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision,

use the following schedule of decreases per hour in wage rates.

(Note—For clerks without previous experience hereafter entering the service of a carrier, rates of wages specified in Sec. 3 (b), this article, are hereby established.)

Sec. 1. Storekeepers, assistant storekeepers, chief clerks, foremen, subforemen, and other clerical supervisory forces.....6 cents.

Sec. 2. (a) Clerks with an experience of two (2) or more years in railroad clerical work, or clerical work of a similar nature in other industries, or where their cumulative experience in such clerical work is not less than two (2) years.....6 cents.

(b) Clerks with an experience of one (1) year and less than two (2) years in railroad clerical work, or clerical work of a similar nature in other industries, or where their cumulative experience in such clerical work is not less than one (1) year. .....13 cents.

Sec. 3. (a) Clerks whose experience as above defined is less than one (1) year .....6½ cents.

(b) Clerks without previous experience hereafter entering the service will be paid a monthly salary at the rate of sixty-seven dollars and fifty-cents ($67.50) per month for the first six (6) months, and seventy-seven dollars and fifty cents ($77.50) per month for the second six (6) months.

Sec. 4. Train and engine crew callers, assistant station masters, train announcers, gatemen and baggage and parcel room employees (other than clerks) .....10 cents.

Sec. 5. Janitors, elevator and telephone switchboard operators, office, station and warehouse watchmen and employees engaged in assorting way bills and tickets, operating appliances or machines for perforating, addressing envelopes, numbering claims and other papers, gathering and distributing mail, adjusting dictaphone cylinders and other similar work....10 cents.

Sec. 6. Office boys, messengers, chore boys and other employees under eighteen years of age, filling similar positions and station attendants.5 cents.

Sec. 7. Station, platform, warehouse, transfer, dock, pier, store room, stock room and team track freight handlers or truckers and others similarly employed .....6 cents.

Sec. 8. The following differentials shall be maintained between truckers and the classes named below:

(a) Sealers, scalers and fruit and perishable inspectors, one (1) cent per hour above truckers' rates as established under Section 7.

(b) Stowers or stevedores, callers or loaders, locators and coopers, two (2) cents per hour above truckers' rates as established under Section 7.

The above shall not operate to decrease any existing higher differentials.

Sec. 9. All common laborers in and around stations, storehouses and warehouses, not otherwise provided for.....8½ cents.

Article III.—Maintenance of Way and Structural and Unskilled Forces Specified

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per hour:

Sec. 1. Bridge, building, painter, construction, mason and concrete, water supply, and plumber foremen (except water supply and plumber foremen coming under the provisions of Section 1 of Article IV, this decision) .....10 cents.

Sec. 2. Assistant bridge, building, painter, construction, mason and concrete, water supply, and plumber foremen, and for coal wharf, coal chute, and fence gang foremen, pile driver, ditching and hoisting engineers and bridge inspectors (except assistant water supply and plumber foremen coming under the provisions of Section 1 of Article IV, this decision) 10 cents.

Sec. 3. Section, track and maintenance foremen, and assistant section track and maintenance foremen.....10 cents.

Sec. 4. Mechanics in the maintenance of way and bridge and building departments (except those that come under the provisions of the national agreement with the Federated Shop Trades).....10 cents.

Sec. 5. Mechanics' helpers in the maintenance of way and bridge and building departments (except those that come under the provisions of the national agreement with the Federated Shop Trades).....7½ cents.

Sec. 6. Track laborers, and all common laborers in the maintenance of way department and in and around shops and roundhouses, not otherwise provided for herein.....8½ cents.

Sec. 7. Drawbridge tenders and assistants, pile-driver, ditching and hoisting firemen, pumper engineers and pumpers, crossing watchmen or flagmen, and lamp lighters and tenders.....8½ cents.

Sec. 8. Laborers employed in and around shops and roundhouses, such as engine watchmen and wipers, fire builders, ash-pit men, flue borers, coal passers (except those coming under the provisions of Section 3 of Article VIII, this decision), coal chute men, etc.....10 cents.

Article IV.—Shop Employees

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per hour:

(Note—For car cleaners rates of wages fixed by a differential shown in Section 4, this article, are hereby established.)

Sec. 1. Supervisory forces .....8 cents

Sec. 2. Machinists, boilermakers, blacksmiths, sheet metal workers, electrical workers, carmen, moulders, cupola tenders and coremakers, including those with less than four years' experience, all crafts.....8 cents.

Sec. 3. Regular and helper apprentices and helpers, all classes..8 cents.

Sec. 4. Car cleaners shall be paid a rate of two (2) cents per hour above the rate established in Section 6 of Article III, this decision, for regular track laborers at points where car cleaners are employed.

Article V.—Telegraphers, Telephoners and Agents

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per hour:

Sec. 1. Telegraphers, telephone operators (except switchboard operators), agents (except agents at small non-telegraph stations as referred to in Supplement No. 13 to General Order No. 27, Article IV., Section c), agent telegraphers, agent telephoners, towermen, lever men, tower and train directors, block operators and staffmen.....6 cents.

Sec. 2. Agents at small non-telegraph stations as referred to in Supplement No. 13 to General Order No. 27, Article IV. Section (c)..5 cents.

Article VI.—Engine Service Employees

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per mile, per hour, or per day, as the case may be:

SEC. 1.—PASSENGER SERVICE

Class	Per mile cents	Per day dollars
Engineers and motormen	.48	$0.48
Firemen (coal or oil)	.48	.48
Helpers (electric)	.48	.48

SEC. 2.—FREIGHT SERVICE

Class	Per mile cents	Per day dollars
Engineers (steam, electric, or other power)	.64	$0.64
Firemen (coal or oil)	.64	.64
Helpers (electric)	.64	.64

SEC. 3.—YARD SERVICE

Class	Per hour cents
Engineers	8
Firemen (coal or oil)	8
Helpers (electric)	8

SEC. 4.—HOSTLER SERVICE

Class	Per day, dollars
Outside hostlers	$0.64
Inside hostlers	.64
Helpers	.64

Article VII.—Train Service Employees

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per mile, per day, or per month, as the case may be:

SEC. 1.—PASSENGER SERVICE

Class	Per mile cents	Per day dollars	Per month dollars
Conductors	.4	$0.60	$18.00
Assistant conductors or ticket collectors	.4	.60	18.00
Baggagemen handling both express and dynamo	.4	.60	18.00
Baggagemen operating dynamo	.4	.60	18.00
Baggagemen handling express	.4	.60	18.00
Baggagemen	.4	.60	18.00
Flagmen and brakemen	.4	.60	18.00

SEC. 2.—SUBURBAN SERVICE (EXCLUSIVE)

Class	Per mile cents	Per day dollars	Per month dollars
Conductors	.4	$0.60	$18.00
Ticket collectors	.4	.60	18.00
Guards performing duties of brakemen or flagmen	.4	.60	18.00

SEC. 3.—FREIGHT SERVICE

Class	Per mile cents	Per day dollars
Conductors (through)	.64	$0.64
Flagmen and brakemen (through)	.64	.64
Conductors (local or way freight)	.64	.64
Flagmen and brakemen (local or way freight)	.64	.64

SEC. 4.—YARD SERVICE

Class	Per day dollars
Foremen	$0.64
Helpers	.64
Switchtenders	.64

Article VIII.—Stationary Engine (Steam) and Boiler Room Employees

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per hour:

Sec. 1. Stationary engineers (steam).....8 cents.

Sec. 2. Stationary firemen and engine room oilers.....8 cents.

Sec. 3. Boiler room water tenders and coal passers.....6 cents.

Article IX.—Signal Department Employees

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per hour:

Sec. 1. Signal foremen, assistant signal foremen, and signal inspectors .....8 cents.

Sec. 2. Leading maintainers, gang foremen, and leading signalmen, 8 cents.

Sec. 3. Signalmen, assistant signalmen, signal maintainers, and assistant signal maintainers ..... 8 cents.
Sec. 4. Helpers ..... 6 cents.

Article X.—Floating Equipment Employees

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, the following schedules of decreased rates of pay are established:

SEC. 1.—FERRIES

Class	Per month
Captains	$200.00
Engineers	190.00
Firemen and oilers (licensed)	140.00
Firemen and oilers (unlicensed)	140.00
Deckhands	125.00
Forters	100.00

SEC. 2.—TUGS AND STEAM LIGHTERS

Captains	$200.00
Mates and first deckhands (licensed)	130.00
First deckhands (unlicensed)	130.00
Second deckhands	125.00
Floatmen and float watchmen	125.00
Engineers	190.00
Firemen and oilers (licensed)	140.00
Firemen and oilers (unlicensed)	140.00
Bridgemen	125.00

SEC. 3.—LIGHTERS AND BARGES

Captains, steam hoist—single drum	$135.00
Engineers, steam hoist—single drum	145.00
Captains, steam hoist—double drum	140.00
Engineers, steam hoist—double drum	150.00
Captains, derricks—under 30-ton hoist	140.00
Engineers, derricks—under 30-ton hoist	150.00
Captains, derricks—30-ton hoist and over	150.00
Engineers, derricks—30-ton hoist and over	160.00
Mates, derricks	100.00
Captains, hand winch lighters and covered barges	130.00

SEC. 4.—LIGHTERS AND BARGES

Captains, hand hoist barges—covered lighters	$120.00
Captains, steam hoist—single drum	125.00
Captains, steam hoist—double drum	130.00
Engineers, steam hoist—single drum	135.00
Engineers, steam hoist—double drum	140.00

Article XI.—Other Supervisory Forces

For the specific classes of employees listed herein and named or referred to in connection with a carrier affected by this decision, use the following schedules of decreases per hour:

Sec. 1. Train dispatchers ..... 8 cents
Sec. 2. Yard masters and assistant yard masters ..... 8 cents

Article XII.—Miscellaneous Employees

For the miscellaneous classes of supervisors and employees not specifically listed under any article, named in connection with a carrier affected by this decision, use the following rule for making decreases:

Sec. 1. For miscellaneous classes of supervisors and employees in the hereinbefore named departments properly before the Labor Board and named in connection with a carrier affected by this decision, deduct an amount equal to the decreases made for the respective classes to which the miscellaneous classes herein referred to are analogous.

Sec. 2. The intent of this article is to extend this decision to certain miscellaneous classes of supervisors and employees submitted by the carriers, not specifically listed under any section in the classified schedules of decreases, and authorize decreases for such employees in the same amounts as provided in the schedules of decreases for analogous service.

Article XIII.—General Application

The general regulations governing the application of this decision are as follows:

Sec. 1. The provisions of this decision will not apply in cases where amounts less than thirty dollars ($30.00) per month are paid to individuals for special service which takes only a part of their time from outside employment or business.

Sec. 2. Decreases specified in this decision are to be deducted on the following basis:

(a) For employees paid by the hour, deduct the hourly decrease from the hourly rate.

(b) For employees paid by the day, deduct eight times the hourly decrease from the daily rate.

(c) For employees paid by the month, deduct two hundred four (204) times the hourly decrease from the monthly rate.

Sec. 3. The decreases in wages and the rates hereby established shall be incorporated in and become a part of existing agreements or schedules, or future negotiated agreements or schedules, and shall remain in effect until or unless changed in the manner provided by the Transportation Act, 1920.

Sec. 4. It is not intended in this decision to include or make decreases in wages for any officials of the carriers affected except that class designated in the Transportation Act, 1920, as "Subordinate Officials," and who are included in the Act as within the jurisdiction of this Board. The Act provides that the term "Subordinate Officials" includes officials of carriers of such class or rank as the Interstate Commerce Commission shall designate by regulation duly formulated and issued. Hence, whenever in this decision words are used, such as "foremen," "supervisors," etc., which may apply to officials, such words are intended to apply to only such classes of subordinate officials as are now or may hereafter be defined and classified by the Interstate Commerce Commission as "subordinate officials" within the meaning of the Transportation Act, 1920.

Article XIV.—Interpretation of This Decision

Should a dispute arise between the management and the employees of any of the carriers as to the meaning or intent of this decision, which cannot be decided in conference between the parties directly interested, such dispute shall be referred to the United States Railroad Labor Board in the manner provided by the Transportation Act, 1920.

Sec. 1. All such disputes shall be presented in a concrete and joint signed statement setting forth:

(a) The article of this decision involved.
(b) The facts in the case.
(c) The position of the employees.
(d) The position of the management thereon.

Where supporting documentary evidence is used, it shall be attached to the application for decision in the form of exhibits.

Sec. 2. Such presentations shall be transmitted to the Secretary of the United States Railroad Labor Board, who shall place same before the Labor Board for final disposition.

Representatives of the various labor organizations involved in the wage cut order of the Labor Board will meet at Chicago on June 27 and 28, to decide on the employees' attitude regarding the lower wage scales. Union officers have consistently refused to comment on the decision and will probably have nothing to say until after this meeting.

A table showing the percentages of these decreases will be found on page 1278 of this issue.

President Confers With I. C. C.

WASHINGTON, D. C.

PRESIDENT HARDING is again interesting himself in the railroad situation and incidentally is making some progress in his education on the subject. Following the cabinet meeting on Tuesday he told the newspaper men that the cabinet had discussed the evidence presented at the railroad hearings before the Senate Committee and indicated that the administration is not quite willing to accept the position taken by railroad executives against reductions in rates. He did not indicate, however, his own position as to how general a reduction would meet the wishes of the administration. Later he held a conference at luncheon with Senator Cummins and J. C. Davis, director general of railroads, and on Wednesday morning he caused some mild consternation by putting on his hat and walking down to the Interstate Commerce Commission offices unannounced. It is reported that he asked for the chief examiner but he was shown to Chairman Clark's office and Mr. Clark called in the other commissioners.

After the President's return to the White House, it was given out informally that he had called upon Chairman Clark and requested the opportunity to meet the commissioners. He said he had called very informally because he recognized that the commission is the rate-making agency of Congress and inasmuch as he had the right to communicate directly with Congress he wanted to communicate informally with the agency. He made inquiry regarding the progress being made in revising numerous rates where the horizontal increase is regarded as having put a burden on some commodities greater than the traffic would bear and he was gratified to learn that the commission has been working on revisions by the process of securing concerted action on the part of carriers and shippers. The specific thing he had in mind was the possibility of a modification of the fruit rates as to which there has been so much complaint from the West.

The conference with Senator Cummins and Director General Davis was for the purpose of considering the possibility of expediting the settlements between the railroads and the Railroad Administration arising from the period of federal control and of funding a greater part of the carriers' indebtedness to the government so as to release the amounts withheld by the Railroad Administration from the compensation guaranteed to the roads as offsets against the capital expenditures along lines suggested by President Rea of the Pennsylvania in his testimony before the Senate committee.

Piece-Work, Bonus Systems and Higher Efficiency

Educational Measures and Systematic Planning Productive of Economy and Stabilized Labor

By C. C. Cook
Maintenance Engineer, Baltimore & Ohio, Baltimore, Md.

THE EFFICIENCY of railroad labor in all departments has been retrograding since 1915. During 1916 and 1917 there was a progressive decline which became accentuated by reason of certain well known causes shortly after our entry into the war. During the war adequate transportation was secured only by extraordinary increases in the number of employees and by the superlative efforts of the more loyal officers and employees. Since the armistice, there has been a fluctuating condition with a tendency toward improvement during the past season, though a conservative estimate of the average condition of the country as a whole would give an efficiency not to exceed 70 per cent as compared to the pre-war period. There are few who would claim the efficiency of forces during 1916 to have been more than 80 per cent of a normal standard. The deduction, therefore, is that efficiency during last season was not in excess of 56 per cent of a normal standard. This conclusion, though startling, is no surprise to those who have analyzed the records.

Innumerable causes for such a condition are known to exist. Generally there has been a lowering of the morale due to the suspicion of intentions of both employers and organized labor. Further, the operation of the National Agreements and the abolition of piece-work and bonus systems have intensified the impression that the interests of the railroads and their employees are divergent.

That impression, it now appears, will be eliminated by the educational influences of the various governmental investigations now in progress and through the beneficial effects already appearing as a result of the operations of the Transportation Act. The co-operation between employer and employee so urgently advocated by all agencies interesting themselves in the transportation question is evidently essential to honest, efficient and economic operation of the railroads.

The Fiasco of the Abolishment of Piece-Work

The morale of railroad forces was progressively broken down; it must be progressively rebuilt. Piece-work and bonus systems, though only in their infancy on railroads, have proven conclusively that both the company and the employee benefited by their application. Freight car repair forces on piece-work earned as much as 50 per cent to 70 per cent in excess of the day rates; forces engaged in steam locomotive repairs in various shops frequently averaged on piece-work earnings from 60 to 70 per cent in excess of day rate earnings. In track work a bonus system in effect on one road resulted in earnings by efficient gangs of 25 and 30 per cent in excess of the day rate.

These are facts not realized any more fully by all operating officers than they are by all workmen, but they are facts substantiated by every officer who had any extended experience with those systems. There is no hesitancy on the part of those officers in proclaiming the abolishment of the piece-work system to be the one definite act which resulted in the greatest of all decreases in the efficiency of any of the crafts. Piece-workers formerly inspired with the knowledge of commendable performance and pecuniary reward were shorn of their incentive. Many of them, realizing that no further additional compensation would be forthcoming as a result of extra effort, relapsed into that group (always present to some extent), who do as little as they can for the wages they are paid.

Can any sound reason be advanced why piece-work and bonus systems, properly supervised, should not be restored? Is it not most desirable to have such restoration or original installation accomplished through open dealings which shall command the complete confidence of all employees? Why should not employee and employer, as individuals, or by gangs, by crafts, by divisions, by systems or within any practical geographical or political limitations mutually agree to do the thing which benefits them both as well as the public they serve?

These plans were never in such general use that any national restoration or establishment of them can take place. In fact, there are but few railroad systems that can make them effective for any one or more groups of workers on the system as a whole.

Their establishment and their restoration must necessarily have limited and humble beginnings, but it should not be delayed. Conceivably the employee is in a poor position to make the advances. These must come from progressive managements. The earlier those plans are made effective and the more general their application to all systems and to all classes of labor to which they may be applied, the sooner will the operations of the railroads in their present quasi-public functioning be a success.

A Piece-Work Plan Applied to Maintenance of Way Labor

It is the intent of this article merely to suggest for one group of workmen whose duties are seldom considered to be subject to standardization, a plan which, in principle, is but a modified piece-work plan, and to note briefly the benefits to be anticipated therefrom. I refer to the track forces and to the standard track work system which had been in successful operation for seven years to a limited, though growing extent, prior to government control of the roads.

Track work has long been thought to consist of such diverse operations as to prohibit development of any extended list of standards for measurements of performance. It is accordingly surprising to have it stated and substantiated by authoritative records that as much as 90 per cent of all track work on a typical railroad division has been measured by standard schedules. This is a greater percentage than has ever been reached by any piece-work plan in any other department of railroad work coming under my observation, and is but an indication of the possibilities of development.

Track laborers have been looked upon as the lowest class of railroad workmen and the most inefficient in performance. Their lot is considered to be the least attractive on the railroad. There is absolutely no reason for that opinion other than failure to measure all angles of the work. Certainly a large proportion of trackmen carry responsibilities of greater weight than those which constitute any part of the duties of most other groups of common labor in railroad work. Trackmen engaged in most operations require skill born of experience in order to do work economically. They have been inefficient but they have not shown the great loss in inefficiency

registered by others of the skilled crafts during the past few years. The work has been unattractive and recorded an excessive percentage of labor turn-over, but the attempts in the past to remedy that condition have ofttimes been lacking in vision and in many cases ludicrous in their repetition in the face of their futility.

During the past few years, the wages of trackmen have so advanced that they are now more nearly on a parity with other similar labor. Notwithstanding this fact, we are still confronted with their continued inefficiency and unstability in their occupations.

Improved living quarters are advocated to render them more stable, but it is safe to say that the best quarters that were ever available for their comfort are now existent, partly as a by-product of the war effort to draw men into railroad service, yet, during the past season, the migration and the unproductiveness continued.

The problem of the trackman is no different from that of any other railroad worker. He will respond to enlightened and sympathetic measures for enlisting his co-operation in making his service to the railroad as much a service to the public as any other unit of the organization. Enlist that response intelligently. Establish a system of standard track work which carries with it increased pay for increased effort and there will develop for the company the productiveness which is now so essential and, within the workman, the consciousness of work well done which only will permanently stabilize a man in any position he may hold.

The Standard Track Work System

The standard track work system, referred to, had developed excellent printed methods and forms which were used by the engineers, supervisors and their assistants in the direction of their work. The rather universal progressive improvement in the efficiency of forces on every division where it was installed is evidence of its value.

The leading benefits obtained may be briefly outlined by a chronology of the development and operation of the system: Early in the season a program of work is prepared and outlined monthly upon a chart which indicates the location, amount, character and relative order of work to be done. The quantity of labor involved is computed from the standard schedules and the required force allotted.

For the current direction of the work the supervisor uses a work order or dispatch sheet which indicates to each of his foremen in detail the character, location and amount of work and standard time for its performance. Work orders are issued consecutively and preferably limited to a quantity of work which will enable constant live direction of gangs through their use. Carbon copies of all work orders are retained on visible file in the supervisor's office and are always available for ready inspection by any officer associated with the work. The advantage of this feature in avoidance of duplication and interference of orders to forces is obvious. When completed, the work order is returned by the foreman, properly dated and signed.

Foremen report their work upon daily time sheets, distributing the time of their gang in accordance with printed instructions so as to conform to the standard schedule descriptions of work.

A "Daily Record of Track Work Performance" form for each gang is maintained by the assistant supervisor. The actual time, reported daily for each operation by the foremen and the standard time therefor, recorded by the assistant supervisor, is used in computing the per cent efficiency of the day. This form enables the supervisor, at any time to compare the performance of one gang with another, the performance of the same gang one day with another or the performance of various gangs on identical operations with each other. There is apparently the distinctively advantageous position in which the supervisor is placed with such current data always on hand.

A form "Monthly Record of Track Work Efficiency" which summarizes the information on the daily record is compiled at the end of each month and there is then data available for comparison of the gangs or of sub-divisions or divisions as a whole. It is used particularly in computing the average efficiency for each gang, upon which the bonus payments are based. These are worked out according to a "bonus table" which guarantees the established hourly rate and pays a bonus according to an increasing ratio of the excess above 67 per cent efficiency. For instance, at 100 per cent efficiency there is a bonus of 20 per cent of the wages at hourly rate for actual time worked; above 100 per cent the bonus increases 1 per cent for each 1 per cent increase in efficiency. It should be understood that the basic 67 per cent efficiency represents the normal performance of an average competent group of workmen as developed by time studies of a number of performances prior to the establishment of a schedule. An efficiency of 100 per cent is the standard schedule and represents the accomplishment of workmen who are performing according to standard practice and with a rapidity and continuity of movement within their power but such as not to impair their physical well-being.

After the system had been in operation two years it was common for sub-divisions to show 80 per cent to 90 per cent efficiency, and not uncommon for the more efficient gangs frequently to exceed 100 per cent. It is evident that the corresponding increased pay made a most striking appeal to the employees affected. It acted as a constant reminder of the interest of the management in the welfare of the employees and could not fail to raise the morale, not alone of those who earned their bonus directly but also of their co-workers and associates.

There were numerous other features developed by this system such as a "Track and Roadbed Feature" form, and a "Track Condition" sheet which were prepared or re-stated monthly for the purpose of an equitable distribution of force; also a permanent system of educating the foremen in the preparation of accurate reports, and other beneficial developments which came as by-products of this methodical conduct of the operations of the department. It is sufficient to state that the fundamentals essential to co-operation of management and employee, to methodical conduct of a large and ever expanding organization, and to the consummation of 100 per cent efficiency and economy in maintenance of track are embodied therein.

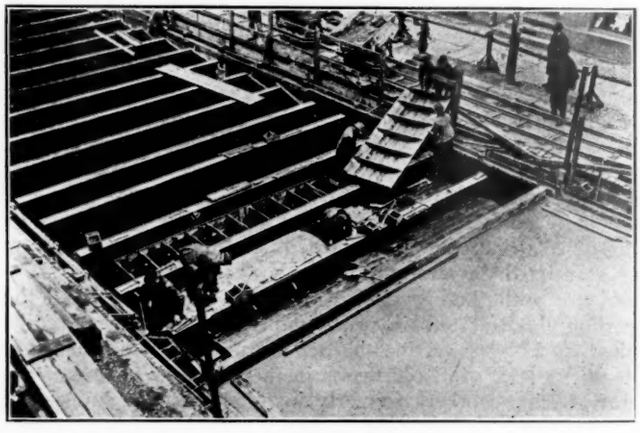


Photo by Keystone

Building a New Subway Through the Streets of Berlin

Railways in War Ridden Regions Greatly Improved

Details of Improvement of Lille Freight Terminal and Yards, Shops and Station at Dunkirk

By Oliver F. Allen
Formerly Major of Engineers, American Expeditionary Forces

BECAUSE of the great property damage in many French and Belgian cities during the war, the railways, in embarking upon their reconstruction program, were enabled to secure additional land and provide increased facilities which otherwise would have necessitated expenditures so high as to be practically prohibitive. One undertaking

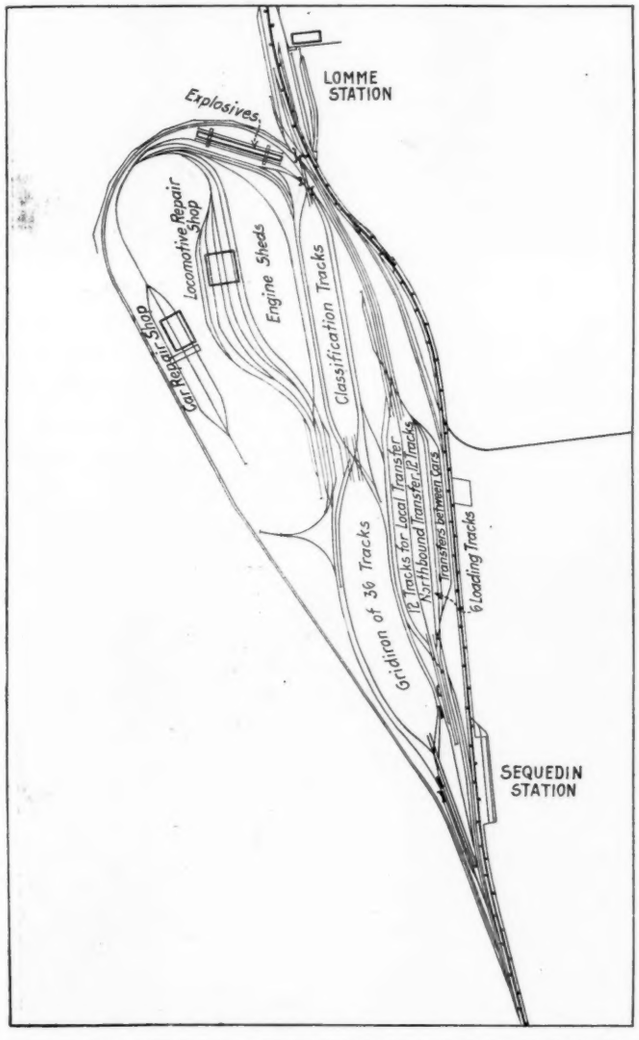


Fig. 1—Classification Yards and Repair Shops at Lille-la-Deliverance, a Part of the Improvement Program at Lille

which is typical of many thus made possible is the construction of a modern freight terminal at Lille-la-Deliverance, forming a part of the general improvement of the Lille loop which was described in the *Railway Age* of April 29 (page 1020).

The classification yard installed at this point is of the gravity type and loops are provided so that a train approaching the yard from any direction will enter the elevated end of the yard. At the other end tracks are provided to allow trains to depart in any direction. At the lower, or southern, end of this yard is a gridiron of 36 tracks for the making up of southbound trains. Between this gridiron and the main line from Sequedin to Lomme is another of 24 tracks for making up northbound and local trains, with six more available for various emergency demands and for freight transfers between cars.

All tracks in these gridirons have a minimum working length of about 2,000 ft. Engine sheds of modern design, replacing old roundhouses, and new, modern and extensive locomotive repair shops are included, as shown in the map. A large car repair shop is also provided for and there is a wye for turning locomotives. The loops and crossovers necessary for free circulation through these yards include some special lines to be used exclusively for locomotives. Intersections are brought through at different levels, bridges being

Fig. 2—A Typical Military Hut Used as a Passenger Station During and Immediately After the War

used to avoid grade crossings and to assure the greatest safety and ease of circulation. Work on the Lille project was started in the spring of 1920, and is now well under way.

Just as the Lille improvements are typical of the interior cities, the betterments at Dunkirk are typical of what is being done at the ports. The capacity with the pre-war facilities of the incoming lines from Lille to the south, the Belgian industrial centers to the east, and Calais and Boulogne to the west, was only about 2,000 average French freight cars per day; that is, about 20,000 tons of freight. The development of the harbor facilities, largely as a military necessity during the war, by the French and British makes it possible to handle 40,000 tons of freight per day, or about twice the capacity of the railroad facilities. Freight traffic has of late grown much faster at Dunkirk than at the other channel ports—Calais, Boulogne, Graveliers and Le Treport. In order to take care of this increased traffic a comprehensive terminal system, shown in Fig. 3, is being built. The old transfer gridiron, near Pier 5, while retained for use in connection with the older piers, will be supplemented at its western end by a large gravity classification yard and the

necessary additional tracks for trains entering and leaving the yard.

An outbound yard is being built, as shown in the map, just west of the classification yard. This yard consists of 30 tracks for both tranfer and assembling purposes and two groups of eight tracks each for the storage of completed trains awaiting dispatching orders. Parallel to this yard is a gridiron of 46 tracks for incoming trains with the necessary connections to enable freight cars to be classified, grouped and forwarded to the proper piers. The tracks in. both of these gridirons have a minimum working length of about 2,300 ft. Adjacent to these yards there will be a modern car repair shop. The locomotive repair and storage facilities at Couderkerque, southeast of Dunkirk on the Lille line, were inadequate. It was decided, therefore, that the shops

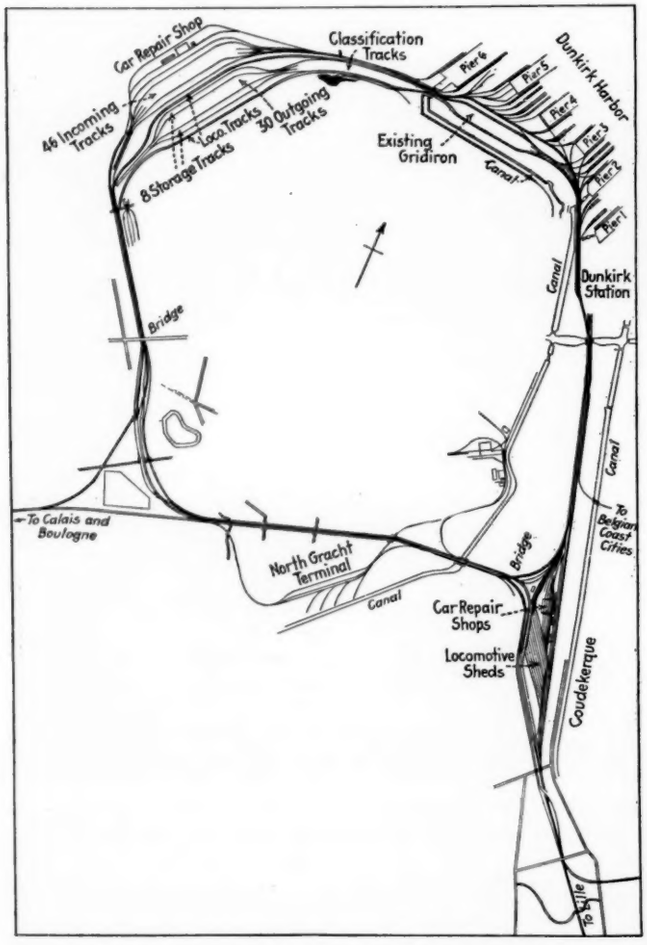


Fig. 3—Improvements at Dunkirk, Showing Enlarged Freight Facilities to Take Care of Increased Harbor Capacity

remaining after the war should be entirely abandoned and replaced by a new large locomotive repair and storage plant. There will be provided here a group of 12 parallel sheds, each with three tracks long enough to take care of three locomotives so that the total covered area will have a capacity of 108 locomotives. To avoid the necessity of installing a turntable, wye connections will be provided. There will also be adequate shops, store houses, etc. An extensive military terminal adjacent to the Bourbourg canal at North Gracht with a double track line, known as the Yser connection, running south between the lines to Lille and Calais, has been incorporated into the lines of the Northern Railway and has become an integral part of the system.

The belt around Dunkirk will consist of seven tracks from the large transfer yards adjacent to the piers around to the Lille lines at Couderkerque. Four of these are primarily for freight traffic—two each for the Calais and Lille lines. The other three are reserved for locomotives—two for the incoming and one for the outgoing. There will be adequate connections on the eastern side of the loop for the Dunkirk passenger station and passenger service to the docks, together with provision for freight traffic on the line toward Belgium. Here, as at Lille and other places, grade crossings are

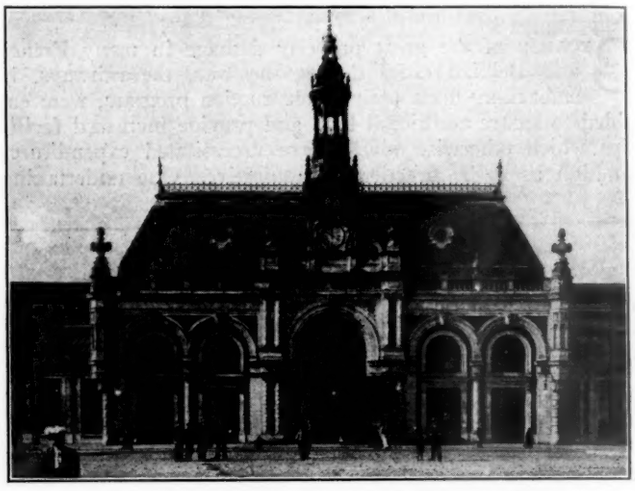


Fig. 4—Valenciennes Station Before the War

eliminated where tracks intersect and bridges are employed to facilitate quick and easy movement. This Dunkirk improvement will cost about $20,000,000 (francs to dollars at par). The railroad company started this work early in 1920, and the project is now well advanced.

A preceding article in this series dealt with the reconstruction of bridges and viaducts and referred to the final phase of railway rehabilitation as including not only the

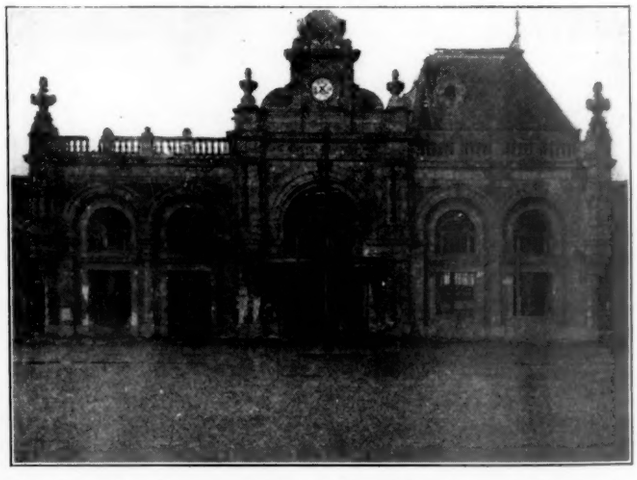


Fig. 5—Valenciennes Station After the German Evacuation

extension of terminal facilities described above, but the restoration of passenger stations and the return to the more luxurious features of travel. The Northern Railway was very proud of its pre-war passenger stations, that at Valenciennes, Fig. 4, being typical. In the preceding article the condition in which the war left the bridges and canals was shown as indicating the problems confronting the engineers in charge of the reconstruction. The illustrations, Figs. 5-6, of the Valenciennes station are typical of the condition in

which the railway company found its stations following the enemy's evacuation, and Fig. 2 shows a temporary railway station of which hundreds were built and many are still in use. Fig. 7 is a typical view of the condition of the roadbed and adjacent buildings as the Boches left them.

It has been shown how the railways have taken advantage of the general destruction to relocate yards and stations. The

Fig. 6—Interior of Valenciennes Station After the Germans Evacuated

same condition is also affording an opportunity to build larger and better passenger stations. In some places, where eminent architects have made comprehensive plans for the rebuilding of entire communities with designs harmoniously blended, the new stations will fit into the general landscape much more artistically than the old ones did. Where towns were de-

Fig. 7—Laon Station on the Soissons-Hirson Line—Typical Conditions Following German Evacuation

stroyed to the extent of Estaires, Lens or many others which might be mentioned, both freight and passenger stations can be relocated to suit the existing and anticipated demands. Inasmuch as the restoration of damaged stations and the building of new permanent structures is one of the last phases of railway reconstruction, photographs of the accomplishments in this direction are not now available.

THE CHICAGO, MILWAUKEE & ST. PAUL is converting a number of sleeping and parlor cars into open top observation cars to be operated in the Rocky and Cascade mountains.

N. E. L. A. Electrification Committee Denounces Government Operation

GOVERNMENT OPERATION of railroads was spoken of as a "dread palsy" and recommendations for the future were made in the report of the Committee on Electrification of Steam Railroads at the annual convention of the National Electric Light Association in Chicago on June 3. The first part of the report was given over to a history of the development of electric traction for railroad trains and the summary consisted of recommendations for the future affecting both the railroads and the people who are served by them. The following is the summary of the report:

"The transportation problem is of vital interest to all of the people, and it is important that it should have the loyal support and interest of all classes of citizens and their active co-operation, so as to obtain the most rapid transportation of freight and passengers in the most efficient manner and at the least cost. This can be accomplished by the constructive support of the legislative bodies and the investing public and by the support of the engineering talent of the country. The time is here when the railroads need the united support of all the people, so as to make use of the improved methods of utilizing the advances in the sciences and the arts, in order to give the people the best transportation facilities. This can only be accomplished, first, by legislation which will remove the objectionable restrictions in the management and operation of the railroads; and secondly by the financial support of investors, so that additional capital will be attracted to the railroads, to enable them to add to their facilities such plant and equipment as is necessary to take care of the increasing traffic and to handle this traffic in the most economical way.

"We believe that at this time much good can be accomplished by studies and investigations conducted by engineers of the railroad management who are well qualified by their training and experience to make these studies. They should have the active co-operation and assistance of the engineers representing other utilities and the large industries, and of consulting engineers who are specialists on this subject, so as to bring to bear upon this question the best minds available, in order to effect improvements in the terminal facilities, rights-of-way, motive power, and in the traffic of the railroads. The power companies of the country stand ready to co-operate in these studies, and to be prepared to offer electrical energy at low cost in most cases where it may be utilized to the railroads' advantage.

"Although the railroad situation is one of interest, and the railroads have had their large part in the development of the American nation, the situation in regard to their future is one of compelling importance. It is unthinkable that American transportation should be subjected to the dread palsy of government operation. We have just about reached the point (disregarding the present recession in business as temporary) where possible restriction to traffic movement in its limitations of industry, has become a matter of the greatest concern to large sections of the United States. There is probably no district or community which is willing to admit that its growth in industry should halt or be limited. For the country as a whole, the growth of industry and population has called for an increase in traffic movement of 100 per cent during each interval of approximately 12 years. While it is not certain that the same rate of growth will be followed during the next 12 years, the situation of the future is sufficiently grave to prove the necessity for provision of transportation facilities necessary to care for the vast increase in business.

While it is not our purpose to point the way out, there must, somehow, some way be developed to care for this situation. Undoubtedly, great good could come from education.

The credit of the railroads must be established to provide the large amounts of capital necessary to develop the transportation machine. To that end, all practices, criticisms, legislative action, both national and local, which operate to affect the credit of the railroads, should, through education of the critics, be eliminated. In its stead, should take place discussion of the burdens of expense imposed upon the railroads by class legislation, unproductive improvements, unreasonable demands of one class of labor to profit at the expense of all other classes, along with the obvious education of the shipping and traveling public as to more economical practices in the movement of traffic and other subjects which will prove of value.

The net result of these would be a sufficient margin between reasonable rates and cost of operation to secure a return which would attract additional capital necessary for the expansion of the railroad machine. There is no stronger force under our form of government than public opinion, and American public opinion in the final analysis has been proven to be reasonable. With the support of public opinion, therefore, upon such a program, the timidity of the investing public as to railroad securities would be removed and there should be available the necessary capital at reasonable rates of interest.

The National Electric Light Association, comprising in its elements a large and far-reaching body of intelligent men, should, prompted by their own interest in the expansion of all industry, accept and undertake as a real responsibility, the intelligent discussion and understanding of the needs of the railroads. Even if this view, which is a broad one, should be limited to self-interest, this should be prompted by the unquestionable fact that for the greater expansion of our railroad service, railroad electrification will, as time goes on, come increasingly into use for regular main line passenger and freight service.

Freight Car Loading

WASHINGTON, D. C

FREIGHT CAR LOADING continued to increase during the week ending May 21, according to the weekly report of the Car Service Division of the American Railway Association. The total for the week was 768,330, an increase of 18,000 in a week. This compares with 862,074 in 1920 and 777,324 in 1919. There was an increase as compared with last year in the loading of grain and grain products, but a decrease in the loading of other commodities. There was an increase as compared with last year in the loading in the Pocahontas district.

The freight car surplus continued to decrease during the week ending May 23 when the average number of surplus freight cars was 422,823. This represents a decrease as compared with the previous week of nearly 27,000. Of the total, 176,442 were coal cars, as compared with 202,348 the week before, and 168,272 were box cars, as compared with 170,595 the week before.

The percentage of bad order cars continued to increase. On May 15 it was 14.2 per cent of the total, or 324,969 cars. Of the total, 4.1 per cent required light repairs and 10.1 per cent required heavy repairs.

Intensive Preparation Urged for Grain Handling

The Car Service Division has issued a bulletin to the railroads stating that intensive preparation is necessary to meet the prospective demands for cars of a grade suitable for grain, flour, cement and other high class commodities. The bulletin points out that on March 1 there were 2,500,000 bushels of grain on farms, an increase over each of the two preceding years of 50 per cent, and including 26 per cent more wheat, 50 per cent more corn and 65 per cent more oats than in 1920. The condition of winter wheat on May 1 indicated an increased production of 15,524,000 bushels, or 9 per cent. While later reports indicate a somewhat lower yield, the prospects are declared to be good for a yield in excess of 1920 and in excess of the five-year average. It is also stated that preliminary unofficial estimates indicate the spring acreage of all grains to be equal if not greater than in 1920. The box car situation on 20 of the principal grain loading roads as of May 15 shows 92 per cent of total cars on line to ownership and 71.9 per cent of home cars on line, but 13.4 per cent of the cars were in bad order. Particular attention is directed to the percentage of cars on line. Although this is 4.4 per cent better than last year, it is stated that the heavy return of home cars in unserviceable condition has so greatly increased the bad order cars that these roads actually have available for surplus only 78.6 per cent of their ownership as compared with 82 per cent a year ago, a reduction of 3.4 per cent, representing approximately 15,000 serviceable cars. The beginning of the wheat harvest in North Texas and Oklahoma begins very shortly with indications pointing to the immediate marketing of a larger proportion of the crop than usual.

The Car Service Division urges the importance of:

1. Closer supervision over loading to insure proper selection of cars, particularly a more adequate observance of Car Service Rule 1. The latter applies with special force to the grain loading roads which must build up and conserve their supply of home cars.
2. Heaviest practicable car repair program, specializing on producing grain-fit cars.
3. Withdrawal from service and storage in grain loading territory of cars suitable for grain loading.
4. Prompt return to owning roads, loaded if possible or empty if necessary, of cars belonging to grain loading roads.
5. As far as practicable, loading grain-fit cars into grain territory, and confining the loading of rough freight for other territories to non-fit cars.

The bulletin also says:

"With the present heavy percentage of home cars on line (highest for 13 years) and the light traffic demands, each road should take such local measures as may be necessary to provide for prospective loading requirements. It should be possible under such conditions to protect the situation with minimum assistance from the Car Service Division. It will be our purpose to interfere as little as possible with the normal functioning of the Car Service Rules and to encourage the roads to work out their local exchange of equipment problems in accordance with existing rules and agreements."

Photo by Keystone

Why Upper Silesia Voted to Remain German—Germans Leaving Berlin to Arrive in Silesia in Time for the Plebiscite

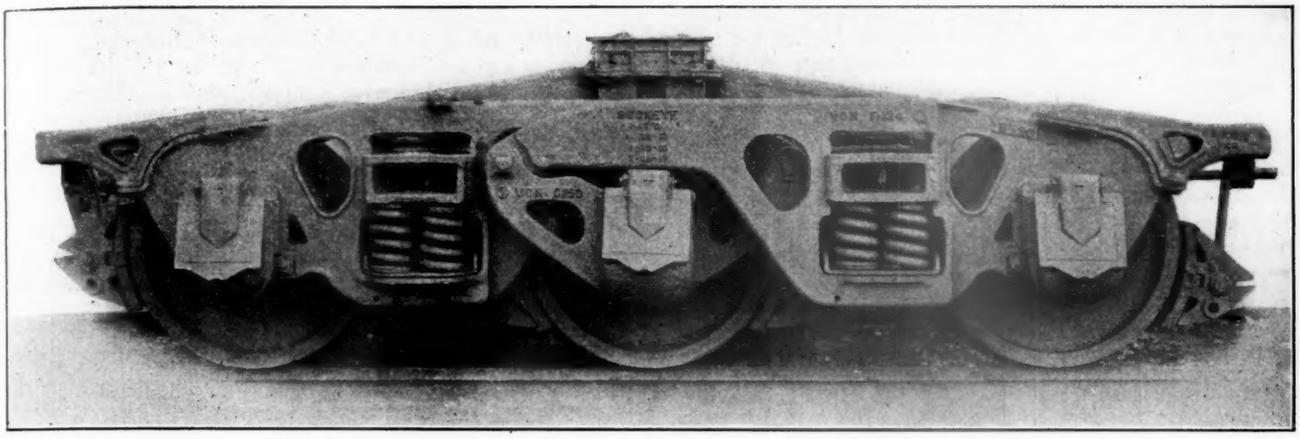


Fig. 1—A Side View of the Buckeye Six-Wheel Truck

New Designs of Buckeye Six-Wheel Trucks

Advantages of Four-Wheel Trucks Retained—Construction Facilitates Inspection and Maintenance

IN THE DESCRIPTION of the Virginian 120-ton coal cars published in the issue of February 18, brief reference was made to the six-wheel truck manufactured by the Buckeye Steel Castings Company, Columbus, Ohio. The new design which was used on 500 of these cars differs in several respects from the earlier form of this truck as described in the *Railway Age Gazette* of August 31, 1917.

These trucks are of much interest, not only as a new development in high capacity freight truck design, but especially because they are designed to retain practically all of the fundamental advantages which have contributed to the recognized success of the present type of A. R. A. four-wheel cast steel truck.

Generally speaking, this latter type of truck owes its popularity principally to the following: (1) Perfect equalization of load regardless of condition of springs or tracks. (2) Accessibility of parts for maintenance and inspection. (3) Flexibility and short wheel base, facilitating operation over uneven tracks, inclines and sharp curves. (4) Brake suspension arranged from parts independent of spring travel. (5) Safety of the detail structures by avoiding having any part carrying load subjected to direct tension.

Method of Equalization

The equalization of the load in the Buckeye six-wheel truck is accomplished by the use of the equalizer casting which engages the center journal as shown in Fig. 1. The side frame castings are so designed that two-thirds of each spring load is supported by the adjacent outside axle and one-third by one arm of the equalizer. Each journal of a given side of a truck, therefore, receives one-third of the total spring load on that side and furthermore the equalizer precludes the possibility of the springs receiving unequal loads on the same side of the truck. This feature affords extreme flexibility in the side members.

Maintenance and Inspection

In former designs of six-wheel trucks replacement of axles, particularly the middle axles, has been accomplished only by the use of special facilities such as drop pits, or overhead cranes. Replacement of bolsters required cutting away rivets and complete dismantling of the truck.

Where large numbers of cars with six-wheel trucks must be maintained in constant service, facilitating the routine work of upkeep is of great importance. The Buckeye truck in its present form is a remarkable advance in this respect. All the parts are of such size and are so disposed with relation to each other that light repairs such as changing bolsters, axles and springs are readily accomplished even in places where no special facilities are at hand.

The simple method employed in the removal of the middle pair of wheels is deserving of special mention. The two consecutive steps are shown in Fig. 2. After removing the bolts, *A*, Fig. 2, from the ends of the equalizer arm and the brake pins, *B*, the two longitudinal bolsters are disengaged from one transverse bolster by tilting them upward so that the truck may be separated as in Fig. 3. Then by placing jacks under the spring seats at *D*, Fig. 3, and removing the equalizer bolts at *F*, the center axle is relieved entirely of its load and can be rolled clear as shown in the illustration.

To facilitate replacement of the transverse bolster, the bolster opening in the frame is designed similar to that of a four-wheel truck frame. The spring seat casting, which carries the brake brackets for the inside brake beams, is separate from the frame. Hence, by jacking up the longitudinal bolsters and removing springs and spring seat castings, the transverse bolster may be replaced in a manner similar to that used with four-wheel trucks.

As will be noted from the illustrations, the use of a separately constructed spring seat and brake hanger casting introduces another advantage, namely, that it permits of making all side frame castings identically alike. This is a distinct advantage, both in the manufacture of the trucks and in the upkeep of repair parts stocks. As an aid to inspection, it is to be observed that all springs in the Buckeye truck are visible and arranged in groups of four in the bolster opening of the side frames as in four-wheel trucks.

Comparing the truck construction shown in the drawing with that shown in the photographs, it will be noted that the former illustrates the use of A. R. A. type journal boxes, also a different construction of end brake hanger. Trucks with these modifications are used only experimentally, the Virginian standard design in all other respects being as shown in the photographs.

By reason of the side frame and bolster construction, the Buckeye truck retains all of the flexibility of the four-wheel truck. Besides providing vertical flexibility, the Buckeye

type of equalizer makes possible the extremely short wheel base of 8 ft. 2 in. Due to the necessity of making the brake parts interchangeable with those of another type of truck of a longer wheel base, the wheel base on the Buckeye trucks

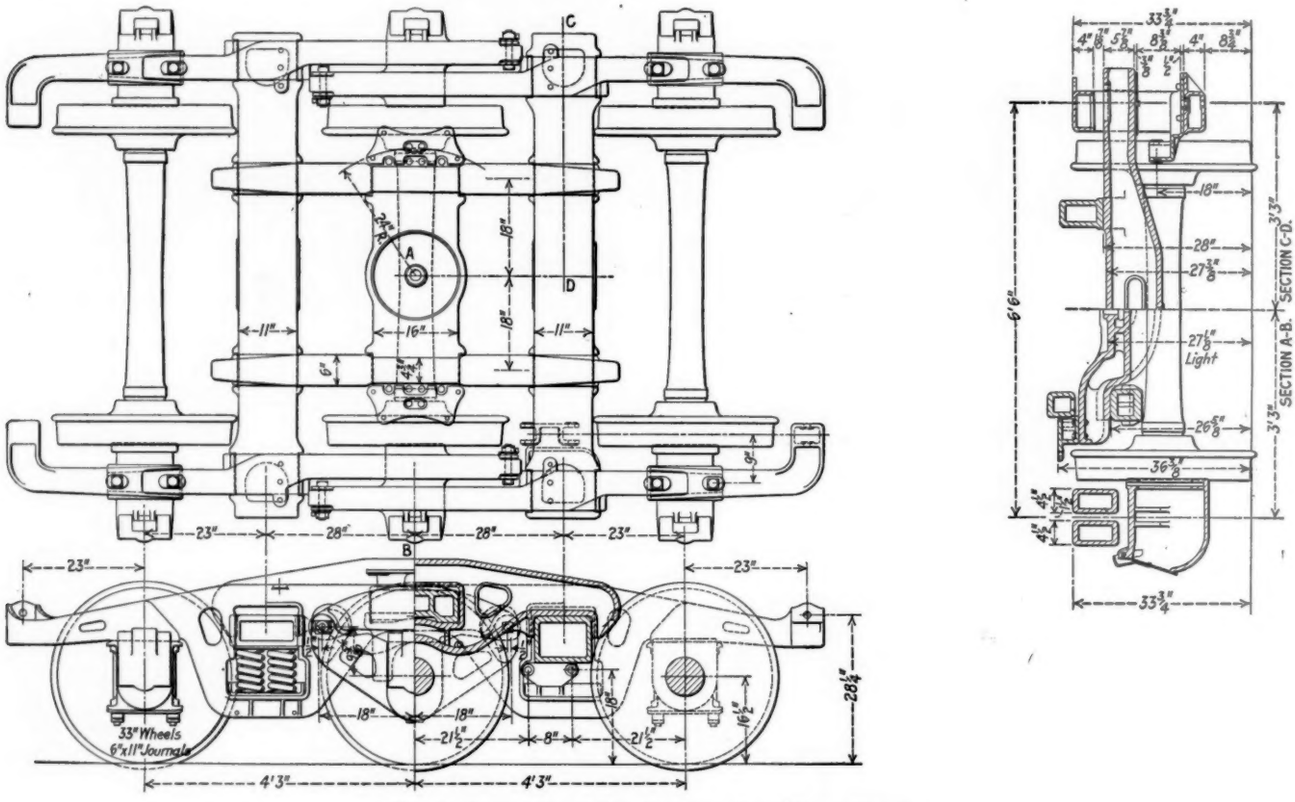


Fig. 2—Assembly of the Buckeye Six-Wheel Truck

on the Virginian cars was increased four inches and is therefore 8 ft. 6 in. as shown in the drawing. The clasp brake rigging used in the Buckeye trucks is suspended entirely from parts independent of the spring travel.

A notable accomplishment in the Buckeye truck design is the avoidance of load carrying members subjected solely to tension. In the Buckeye trucks, the parts that carry the loads are so designed and assembled with relation to each other that they are not subjected to direct tension stresses: i. e., the parts perform the function of beams rather than that of hangers. From the foregoing it will be noted that practically all of the important fundamentals of the four-wheel truck have been observed in this six-wheel truck design.

The Buckeye trucks as used on the Virginian were designed for use with car bodies having either 12⅞ in. or 18½ in. center sill spacing and with truck centers of 36 ft. 1¾ in. The design conditions specified that the cars should operate successfully over tracks having a horizontal curvature of 20 deg. and a vertical curvature of 350 ft. radius. These conditions have been met with a safe margin as evidenced by experimental tests where cars negotiated curves of more than 30 deg. curvature.

The general specifications of the trucks are as follows:

Wheel base	8 ft. 6 in.
Center plate height (light car body)	27⅛ in.
Side bearing height (light car body)	42 11/16 in.
Center to center of side bearings	48 in.

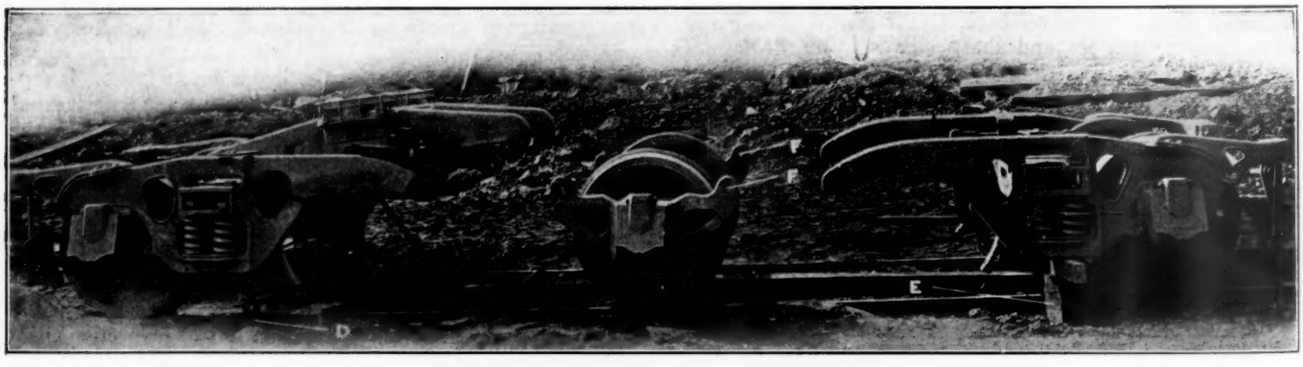


Fig. 3—Center Wheels Ready for Removal

Axles—A. R. A.	6 in. by 11 in.
Wheels	Rolled steel
Brake equipment	Clasp brake with vertical levers
Springs	Virginian No. 28 (Same as A. R. A. Class D except 1 5/16 and 11/16 in. bars)
Free height of springs including caps	8½ in.
Solid height of springs	7 in.
Side bearings	Stucki
Brasses and wedges	A. R. A. standard.

The total weight of the trucks per car is 37,000 lb., distributed as follows: cast steel parts, 14,500 lb.; brake material, 3,800 lb.; springs, 1,100 lb.; wheels and axles, 15,200 lb., and other material, 2,400 lb.

The Railway Fuel Association Convention

Subjects Include Fuel Preparation and Distribution, Fuel Organization, and Enginemen's Records

FOLLOWING the first day's sessions of the thirteenth annual convention of the International Railway Fuel Association, a report of which appeared on page 1233 of last week's issue, other reports and papers were presented on a wide range of subjects pertaining to the production, purchase, distribution and methods of supervising the use of railway fuel. Abstracts of the more important of these papers follow.

Preparation and Distribution of Fuel

P. E. Bast
Fuel Engineer, Delaware & Hudson

The railroads of this country use annually about 150,000,000 tons of coal. It was not at all improbable that five per cent more ash was included in railroad coal shipped during 1920 than in normal times. If this is true, 7,500,000 tons of additional ash was handled and hauled. But this tells only a part of the story. It has been authoritatively stated that there is a decrease of about 1½ per cent in efficiency for each additional one per cent ash content in the coal. The addition of the 5 per cent of ash means a reduction in efficiency of the good coal of about 7½ per cent, which together with the 5 per cent of ash makes a total reduction in efficiency 12½ per cent. Therefore, if five per cent more ash was included in the coal used by the railroads in 1920 than during normal times, it would be equivalent to 18,750,000 tons of coal with a money value of $75,000,000. Each one per cent reduction in extraneous ash would result in a saving of $15,000,000. To this must be added the waste in car mileage, the additional handling of ashes, delays to traffic, etc., the total of which is no inconsiderable amount. It would, therefore, appear that the preparation of railroad coal should command the careful attention of every railroad operating official.

It would seem reasonable that any railroad consuming an annual minimum of say 100,000 tons could well afford a mine inspection service, the expense of which would be negligible compared with the results possible to obtain.

Preparation of coal in the mine is the very foundation of fuel economy. The operator should feel his sense of responsibility in living up to the true intent of the railroad's contract or specifications, impressing upon his miners and other employees the necessity for clean coal, the railroads cooperating to the fullest extent through their mine inspectors.

The extraneous or free impurities in coal usually consist of slate, shale, mud seams, mother coal, sulphur balls or lenses, sand rock from the mine roof and clay from the mine floor. Sulphur, in the form of pyrites, shale, mother coal and thin slate partings are the most difficult to eliminate because they are more or less broken and intermingled with the coal when it is shot down, but with special care on the part of the miner during shooting and loading in the mine cars, these impurities can be thrown out and consigned to the dump pile. There should be no excuse for the loading of roof slate, sand rock, clay from the mine floor, thick slate band, sulphur balls and lenses, inasmuch as any one of these last mentioned impurities can be detected in the mine and on railroad cars during loading.

Some coal seams have a distinct strata of bony coal. Precaution should be taken to eliminate this bony structure to a minimum. It could be used at mine power plants or disposed of locally.

Preparation of coal has so many varying angles that it would be difficult and unwise to set down any ironclad rules, yet it is believed that if the following few suggestions were carried out it would result in reducing the ash content of railroad fuel and would relieve the railroads of the burden and expense of transporting superfluous waste.

1. Periodical inspection of mine working places by proper mine authorities to see that coal is mined and prepared according to instructions.
2. Check system to determine the responsibility for loading dirty coal; discipline or docking, if law and agreements permit.
3. Shooting down coal so as to keep the percentage of slack down to a minimum.
4. Installation of picking tables where the nature of the coal requires extra precaution in preparation.
5. Proper and adequate drainage facilities.
6. Inspectors on railroad cars during loading to throw out removable impurities.

Consideration should be given co-operation of the railroad mine inspector and operator so that coals normally classified as undesirable can be made to meet the requirements of the railroads. This applies where coals least commercially salable are used by the coal bearing roads from a traffic development standpoint.

Expensive controversies and rejection of coal could be reduced to a minimum if the railroad would first obtain a complete inspection of the mines, showing all details of their methods of working, as well as of the coals offered before purchasing or making contracts.

DISTRIBUTION

Distribution of coal is another important step in fuel economy. Like preparation, it is subject to many varying conditions such as irregularity of mine shipments, weather and traffic conditions, shortage of labor, power and car equipment, etc.

During the past three years distribution has been more or less demoralized due to motive power and car shortages, traffic congestion, labor disturbances, etc., and until these conditions have become stabilized for a reasonable period distribution will continue to be subject to necessity.

It would be rather difficult to estimate or even approximate the annual loss to the railroads on account of poor distribution, such, for instance, as the placing of improper equipment under load at coaling platforms, stations, chutes and storage systems; overstocking, causing extra handling and per diem charges on foreign cars; the loss from a shortage of coal which necessitates holding back revenue tonnage in order to rush coal to some particular point, also in many cases, much to the displeasure of the shipper and inconvenience of the consumer, making it necessary to confiscate commercial shipments, which must be paid for at a high price; and last but not least, cross-hauling.

There seems to be a difference of opinion among railway officers as to the department to handle the distribution. This is evident from a survey of thirty railroads covering practically every section of the country. The distribution by departments was as follows: transportation, 16; fuel, 9; mechanical, 2; purchasing, 2; by committees, composed of representatives of different departments, 1.

When we consider the variations in the different coals used by the railroads it can readily be seen how important it is that the coal distributor be familiar with the product that he is distributing. However, on many railroads this is not the case, and the lack of this knowledge has resulted in

the slowing up of transportation by the distribution of coals to certain districts where the crews were not familiar with them or the power conditioned for their use.

Every railroad should have a distribution schedule based on the location of mines and characteristics of the coal so far as grade and quality are concerned. Since contract coal for any particular railroad using a large tonnage is bound to be of varying qualities, it would seem preferable to select the most desirable coal contracted for as a standard, the other coals then being compared and computed in terms of the standard. Distribution would then be simplified, so far as supplying to each district and class of service a uniform grade and quality of coal, which is a very important item from a standpoint of fuel conservation.

Distribution in a general sense is not a one department problem, it requires the closest co-operation of the several departments and with this in view the following suggestions are made regarding the distribution of supply coal:

1. A consumption schedule for all points, frequently revised and kept up to date to meet the demands of traffic, etc.
2. A distribution schedule showing coals contracted for, grading of coals to a fixed standard, showing grades and qualities most suitable for each district and class of service.
3. A schedule showing coal consigned from mines to be shipped preferably to point of consumption with a view of eliminating extra handling and cross-haulage.
4. Daily telegraphic report showing coal on hand under load at each coaling station.
5. Daily telegraphic report covering shipments of coal and receipts at junction points, in order to keep the loads up to a reasonable degree of safety and down to a minimum with reference to transportation needs.
6. Storage of coal during summer months, relieving the road from transporting company coal in the winter months during the season of peak load. This has special reference to railroads located beyond a reasonable distance from coal fields.
7. From a purchasing standpoint, the most economical grade and quality of coal for each district with consideration to price, freight rates, mine locations, etc.

Discussion

Most of the discussion dealt with the problem of preparation of coal at the mine, C. F. Richardson (West Kentucky Coal Company) very frankly discussed the usual relations between the railroad and the mine and stated emphatically that in order to get clean coal the railroads must be ready to pay a price that will make it possible for the operator to pay the men required on the picking table. He suggested that the railroad purchasing agent might well pay a premium for 100 per cent coal, rather than to buy 70 per cent coal and 30 per cent rock, on a price basis only. He also stated that the demand for tonnage by the railroad is not an incentive for the operator to clean his coal properly, since thoroughly cleaned coal reduces the tonnage output of the mine.

Eugene McAuliffe pointed out that while the B.t.u. basis of purchasing coal is probably the best available, it is not an accurate standard, because variations in ash produce a disproportionate effect on the heating value of the coal beyond the direct effect on the B.t.u. content.

The importance of having a coal distributor was pointed out by W. L. Robertson (B. & O.), in order to avoid the necessity for confiscating commercial coal for railroad use to meet immediate requirements of some stations. Such coal frequently costs as high as $16 a ton.

Standards of Fuel Economy

D. C. Buell, director, Railway Educational Bureau, presented a paper on this subject, in which he gave a comprehensive outline of the steps which must be taken before ideal results can be secured in any campaign for the economical use of railway fuel.

Starting with the executive, Mr. Buell took up the essential requirements of a fuel conservation policy, and outlined the matters for executive attention in the purchasing, operating and mechanical departments. The conditions which require the attention of the supervisory forces were then enumerated for all departments concerned, including fuel inspection, operating requirements, the important points for attention in the shops and roundhouse and the points requiring special attention by the road foreman.

In all, the paper enumerated 78 points, of which he said in closing:

"There is hardly an item in this entire list which has not been a subject for a paper or for discussion at some of the conventions of the International Railway Fuel Association. Those who have been members of this Association for a number of years have their file copies of proceedings which can be referred to in order to check the methods presented to this Association by practical fuel men, which have proven successful in dealing with these numerous problems.

"Those who have only recently become members of the Association can obtain back copies of the proceedings of the last few years from the secretary for a nominal sum.

"The problem of fuel economy is just as much a science as any other of the engineering problems, and it is only through a careful study and analysis of individual problems that an officer whose duties involve a responsibility for fuel economy may hope to obtain satisfactory results. Therefore it is urged upon the members of this Association that our proceedings be used as a scientific or engineering reference library to be referred to and studied, in order that they may become more proficient in this branch or specialty of our great American transportation problem."

Discussion

Harrington Emmerson briefly sketched the history of the development of the use of steam power from the first crude steam engine when there was no quantitative measure of the energy in the coal at one end or of the work performed at the other, through the steps that finally led to the present knowledge of steam engineering which makes possible a definite determination of the efficiency of the application of fuel to the production of work. He concluded that what was necessary in the efforts of the railways in fuel conservation were similarly definite standards of fuel consumption in relation to ton-mile output so that the success of fuel economy programs could be definitely measured.

In closing the discussion Mr. Buell stated that in developing and correlating the various factors in a complete plan for fuel economy, he had followed the principle of dependent sequences developed by Harrington Emmerson in his paper presented before the association at the 1915 convention. Mr. Buell also acknowledged the importance of definite standards under present conditions, since the public has a right to inquire as to the efficiency with which the railroads are managed and operated and the railroads cannot afford to be without some such standards, the absence of which will indicate to the public a lack of knowledge of the fundamentals of their own business.

Fuel Department Organization

By L. G. Plant
Associate Editor, Railway Review

Fuel economy is eminently a problem of organization. The acquisition of new locomotives, the erection of new terminals and shops, the purchase of better coal, do not alone constitute fuel economy. This is largely dependent upon consistent and persistent individual effort organized in accord with a well defined plan of action.

If a locomotive is to pull tonnage each part must be designed for a purpose and assembled in its proper place. Yet, when we assemble an organization to supervise the

operation of this locomotive, each man's objective is often obscured and his relation to superior officers and subordinate employees sometimes confused.

On how many roads has the organization of fuel economy been carefully planned to accomplish a well defined aim? More often this organization represents merely a man added here and there to fill a very obvious void.

The Present Status of Organization for Fuel Economy

This critical appraisal of fuel department activities is suggested by the result of inquiry into the status of fuel organization on 50 railways, representing 183,884 miles of line and 42,854 locomotives owned. This does not include all of the largest railways nor many small roads. It is

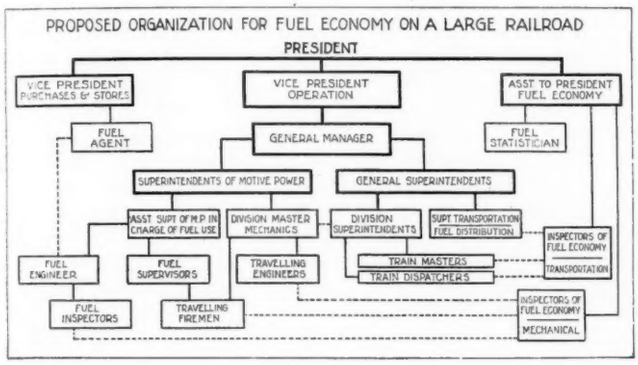


Fig. 1

confined to Class I railways owning an average of more than 800 locomotives each, but does not, for instance, include either the Pennsylvania or the Baltimore & Ohio railroads. It may be said to be fairly representative of the situation throughout the country.

On 40 per cent of these roads we find no semblance of an organization devoted wholly to the supervision of fuel use. On 68 per cent of these railways the mechanical department is held responsible.

What are the most salient points suggested by this analysis of the situation on 50 railways? First, the totally inadquate provision for enforcing fuel economy on many railways must indicate either lack of appreciation for the full importance of fuel economy or failure to comprehend the real nature and scope of the fuel problem. Even where supervision is provided, large discrepancies in the ratio of supervision plainly show that there is no common understanding of what does and what does not constitute a real fuel department. The following tabulation demonstrates a wide divergence of opinion as to what is adequate supervision:

Number of railways in group	Number of locomotives in active service to: One traveling engineer	One traveling fireman	One fuel supervisor	One fuel inspector
20	64	114	none	164
14	58	90	150	236
7	64	99	639	258
4	53	110	161	674
5	78	88	114	241

But with respect to those railways upon which substantial provision has been made for enforcing economy in fuel use, does not the absence of any uniform plan of action suggest the lack of a well defined objective?

Well Defined Objective Essential to Effective Fuel Supervision

Since the absence of uniformity in the manner of fuel supervision suggests the lack of a well recognized objective, it is of the utmost importance that the real objective be clearly comprehended before consideration is given to the organization of fuel economy. The objective of this organization may be concisely defined as the determination and procurement of the least expensive fuel available, service as well as price considered; and the most productive utilization of this fuel.

Traffic considerations which influence the revenues of the railway may also be a factor in the selection of fuel, but it is contended that where traffic considerations are permitted to influence the selection of railway fuel, an effort should be made to appraise the true value of this traffic. Too often are traffic considerations of the vaguest value permitted to determine the selection of a fuel that will cause the railway a quite definite loss.

Therefore, it is the function of an organization devoted to fuel economy to determine, in advance, the most economical fuel, all factors considered, and to undertake the procurement of this fuel. This involves not only preliminary investigation and tests, but subsequent inspection to enforce delivery of fuel that conforms closely to the grade purchased.

Also, it is the function of an organization devoted to fuel economy to enforce efficiency in the distribution and use of this fuel. This involves distribution in accordance with a well arranged plan, expeditious handling at fueling stations, skillful firing and intelligent locomotive operation, efficient motive power and effective operation of the railroad as a whole.

From the foregoing it must be apparent that the scope of fuel economy embraces many departments, but principally, it is the function of the mechanical, the operating and the purchasing departments. Fuel economy can only be attained through the organized effort of each one of these departments. It is idle to talk of a separate department that can assume all the responsibilities of fuel economy. Are there not too many departments at present? To relieve the mechanical, the operating or the purchasing department of a fraction of its individual responsibility would be disastrous. Rather, the effort should be to make each of these departments appreciate its full responsibility for fuel economy and to organize its activities accordingly.

The only possible excuse for shifting these activities lies in the failure or inability of one department to assume a responsibility that properly belongs to it. Where this situ-

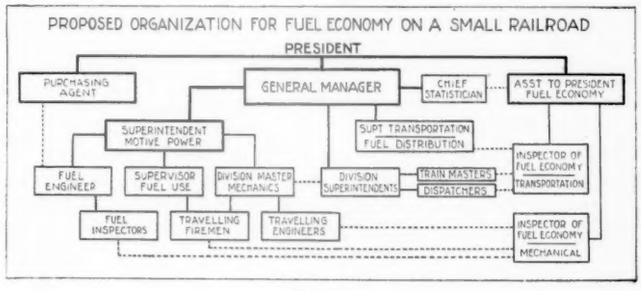


Fig. 2

ation necessitates the formation of an individual department, the purpose of this department should be to assume as few rather than as many routine functions as possible. It is well to bear in mind that fuel economy can never be comprehended within the activities of a single department.

Importance of Continuity of Effort

The organization of fuel economy might be completed with the proper organization of these activities within each department if we were sure of two facts: first, that the activities of each department are being properly co-ordinated, and second, that an adequate supervisory organization is continuously maintained and is functioning to the best advantage.

We may have the most ample and competent organization

for the enforcement of fuel economy within each department, but if this is not continuously maintained it may prove more harmful than helpful. There is no more disorganizing or discouraging factor in the pursuit of fuel economy than the intermittent establishment and abolishment of large organizations for supervising fuel use. The most meagre permanent organization is preferable to the most elaborate temporary organization. Is it possible that the management of a railway on which fuel supervision is allowed to vary with each fluctuation in monthly earnings can realize that eternal vigilance is the price of fuel economy?

Proposed Organization for Large and Small Railways

The proposed organization for a large railway is illustrated in Fig. 1, and the proposed organization for a smaller road is shown in Fig. 2. Fundamentally, these plans are the same because, fundamentally, the problem of fuel economy does not change with the size of the road. Both of these diagrams are intended to depict an ample supervisory organization within the mechanical department for adequate supervision over fuel use and the procurement of fuel.

The diagrams referred to in Figs. 1 and 2 are also intended to indicate an operating and purchasing department organization that, so far as the conduct of these departments is concerned, is fully capable of enforcing economy in fuel use. The distribution of fuel is assigned to the superintendent of transportation as a proper function of the operating department. Fuel purchases must be entrusted to the purchasing department, or to a branch of this department, but these diagrams are purposely constructed to suggest an intimate relation between the fuel engineer and the fuel agent, since it is highly essential that there be the closest cooperation between the department that buys and the department that must use the fuel.

There is nothing new in the proposal that a superintendent of fuel service, reporting to the superintendent of motive power, direct the activities of several fuel supervisors toward the enforcement of economy in fuel use. In fact, this appears to be the most popular form of fuel supervision now in effect. Preferably, however, he should be an assistant superintendent of motive power, on account of the real importance as well as the breadth of his task.

Success in the administration of fuel supervision by an assistant superintendent of motive power is dependable upon two factors: first, concentration upon the enforcement of fuel economy, and second, an adequate ratio of supervision, since no possible variation in the structure of an organization can take the place of intimate personal supervision.

The successful supervision of fuel use by the mechanical department is plainly contingent upon the employment of an organization that represents a genuine addition to the supervisory force. To merely alter the title of a traveling engineer to that of fuel supervisor does not constitute a real advance toward fuel economy; there must be a net addition to the supervisory force that will bring the ratio of supervision over locomotive performance to at least one to each 40 locomotives in active service.

Head Fuel Organization with an Assistant to the President

But it is upon the establishment of a direct connection between the chief executive and the administration of fuel economy that the successful operation of the proposed organization is chiefly dependent. Otherwise this organization would have no fundamental advantage over organizations that are already in operation and would be subject to the same defects.

To establish this direct connection between the chief executive and the administration of fuel economy, the appointment of an assistant to the president is proposed. It is not the purpose of this appointment to further complicate supervision over fuel use. The position conveys no direct authority. He may advise and consult; and, in this impartial way, insure co-ordination in the activities of all departments toward fuel economy. But he will not exercise executive authority except in the conduct of his own very limited staff. His duties require that he know at all times whether each unit of the organization is or is not contributing its best efforts toward fuel economy. He should be able to state with assurance what net savings may be expected from additional supervision over fuel use or where this organization might be curtailed without entailing a net loss to the railway.

The measure of fuel economy lies only in statistics that reflect each phase of operation. These must be interpreted with the utmost discretion and it is entirely consistent that such statistics be compiled under the jurisdiction of an impartial judge in the person of the proposed assistant to the president. Therefore, it is suggested that a fuel statistician be attached to the staff of the proposed assistant to the president or, on small railways, the services of the chief statistician be available to this office.

The position of inspector of fuel service is even a more necessary adjunct to this plan. The number of these inspectors would be proportioned to the size of the railway and density of traffic, but it is contended that on even the smaller roads there should be at least one inspector of fuel economy who would devote attention to the conduct of the operating department, and another inspector who would observe and report upon the activities of the mechanical department toward fuel economy.

But it is the chief function of the proposed plan to perpetuate a broad fixed policy toward fuel economy. In fact, the position of an assistant to the president, and subordinate inspectors acting in the capacities which have been described may truly be said to embody the policy of fuel economy.

Discussion

W. L. Robinson (B. & O.) briefly described the form of organization on the Baltimore & Ohio. This is a staff organization, the head of which reports directly to the chief of motive power and the vice-president in charge of operation and maintenance, to whom in turn reports the chief of motive power. The staff organization has supervision over the use of the fuel, the purchase being handled by a fuel agent, and the inspection by the engineer of tests, both of whom report to the operating vice-president. The staff organization includes six district supervisors, three inspectors of fuel service, a fuel statistician and a fuel distributor who is in effect a general superintendent of transportation for railway fuel. The organization includes no traveling firemen, the direct supervision being handled by the road foreman or his assistants under the staff supervision of the district fuel supervisor. In this connection Mr. Robinson stated that on the Baltimore & Ohio the ratio of traveling engineers and assistant traveling engineers to the number of locomotives in service is 1 to 38. Accounting for the fuel is handled in the accounting department under the jurisdiction of another vice-president.

Two principles of a successful fuel organization were particularly emphasized in the discussion. The first is the adoption of a fixed policy on the part of the management and the second, that the authority for the execution of this policy remain in the departments whose regular routine duties include some phase of the fuel problem, thus making the fuel organization advisory rather than executive. Speaking of the first principle, Eugene McAuliffe recalled two cases where railway managements had made records for themselves by the much advertised results of their fuel organizations, both of which at a later date discontinued these organizations, thus securing no permanent benefit. The difficulty of effectively working out the second principle lies in the tendency for the supervisors in the operating organization to think that they know all there is to be known about the problem,

while on the other hand the staff organization, the business of which is to know, too frequently attempts to assume the authority properly belonging to the operating organizations.

Value of Individual Fuel Performance Records

By Robert Collett
Superintendent Fuel and Locomotive Performance, New York Central

There have been presented before this Association several papers outlining the practice on various railroads where individual fuel records have proved valuable and which in some instances continue in force. A reasonably thorough canvass, however, discloses that such records are by no means standard practice on American railroads, chiefly, it seems, for the reason that the general method of determining individual coal charges to locomotives is largely guesswork. The value of any record lies in what we get from it and depends on the good or bad opinion of those who live with it. Mr. McAuliffe once aptly said: "I have been connected with a dozen different kinds of fuel performance records not one of which was absolutely correct, but the worst was better than none at all."

Railroad officers fully appreciate the need of knowing, first, about how much fuel is required for a given service, and secondly, how much is being used. How best to get this information depends chiefly on local conditions. With present day facilities on the average railroad it is not possible to present to an engineman or fireman a bill, so to speak, for a certain amount of fuel burned for which he is responsible, since all of the old handicaps of delays, light mileage, etc., over which he has no control, are still with us and added thereto are a number of other complications such as changing firemen, pooled engines, no means of measuring coal, and so on.

The engine record seems the best as a rule, save for oil-burners under certain favorable operating conditions, and this plan now predominates. The average cost of compiling such a record proves to be from one-half to one cent per ton of coal used. It is not usually intended as a check against the total fuel consumed, but to keep interest aroused. Grouping selected runs and showing only representative trips and not necessarily the total mileage or total fuel consumption for the month, has met with success on certain roads. The value of a fuel record also depends on how it is handled with the engine crews and the various departments responsible.

There are individual records which may be of value, although not elaborate. On the New York Central Lines East, we have made a great many trip records of fuel consumption and given considerable publicity on the road to these reports in an effort to apprise all concerned what is considered good performance. Also, through various records of observations we attempt to check conditions affecting fuel costs, which include locomotive operation, quality and distribution of fuel, locomotive conditions, transportation matters, and lubrication. One reason for including the latter is the claim so often made that oil is often saved at the expense of fuel. These individual observations are made in company with a division officer and matters are handled on the ground, in preference to writing letters. The idea is not so much to improve the individual waste as to have conditions right on the division and the railroad as a whole.

We give each division officer, including traveling firemen, what we call a bill of expense each month for the fuel burned in each class of service, the unit consumption, and the total cost. We also show this in "Cost per 1,000 Locomotive Miles." One reason for this is to compare the relative cost of fuel with other items which may have received no more attention than they deserved, but relatively far more attention than the fuel costs. On the enginemen's bulletin boards we post a statement of miles run per ton of coal in each class of service, with a foot-note showing the number of scoops used per mile and what a small saving would amount to. We find the men like this even better than the gross ton-mile statements, although we post them also. Recently, we have been posting at some of our terminals the coal charges as shown by our daily report of disbursements, which shows the engine number, to which we have added the train number. Of course, it gives the crews an opportunity to criticise our coal estimates, but it creates interest and makes us careful in our estimating.

If we get individual effort collectively applied and concentrated on ways and means to encourage pride in having our railroad the best in fuel performance, it matters not so much what kind of records we have. If our records give individuals credit and commendation where due, and point out to all departments and individuals in a co-operative spirit what we are doing, what it is possible to do and in some small way at least how to do it, we will have two fuel supervisors on every engine and one in every officer.

I believe in an individual record and a daily check of the coal burned, so far as practicable, against the ton miles or passenger car miles for the education and interest it affords to those who follow fuel economy and who use fuel. But no record ever taught a man how to fire or run an engine more skillfully than he already knew. We certainly need and in time will have better and more fuel records on American railroads, but where successful, under present coaling arrangements, they will not attempt to stress individual liability so much as they will the possibilities of concerted effort.

Discussion

J. G. Crawford (C. B. & Q.), presented a written discussion from which the following is taken:

In 1917 a committee consisting of an assistant auditor, fuel distributor, inspector of stores, traveling accountant, engineer of tests and myself were appointed to investigate fuel accounting. The accounting necessary in connection with the "Daily and Monthly Enginemen's Fuel Performance Statements" influenced the fuel accounting to a considerable degree, and the first work of this committee was to find out what use was made of and to estimate the value of the "Daily and Monthly Enginemen's Fuel Performance Statements."

The committee assumed that the reports were for the following purposes:

(1) To create interest among enginemen which would result in a more economical use of locomotive fuel.

(2) To give master mechanics and road foremen a statement which they can use to determine the relative standing of the enginemen so that they can urge, require and demand improvement of those whose performance is below what it should be.

(3) To give superintendents of motive power and other general officers a summary of the effects of fuel economy efforts.

Twelve division points and two important terminals were visited. Master mechanics, road foremen, engineers and firemen were interviewed. Bulletin boards and bulletin books were examined to ascertain the manner and date of posting these statements. About one-half of the eighteen divisions were found to be making out the daily statement, but all divisions were compiling the monthly statement. The cost was about $1,200 per month as statements were being made out and would have been about $1,800 per month had statements been made out as originally intended.

All divisions compiled the monthly statement. This could not be avoided, because the monthly statements from each division were consolidated into a system statement. Of the twelve division points visited only eight had the monthly

reports posted. Some of these had not been sent to roundhouses for posting for over a year and one was being put in the waste basket by the roundhouse clerk. Only five division points had made out and posted the daily reports. One division did not figure the pounds of coal per switch hour, per passenger car mile or pounds per hundred ton miles or the average speed. In some cases the daily reports were carbon copies, made with pencil instead of typewriter, and were not readable.

The daily reports were posted too late to be of any value. It was originally intended to post these within 48 hours after the day covered by the report. The monthly reports were posted about three weeks after the end of the month. At one point where there are ten bulletin files the four last monthly reports were on three different files. Some bulletin boards are so constructed that it is next to impossible to examine this statement.

Of 122 engineers and firemen interviewed, 51 stated they did not examine the statements and 66 said they did occasionally, but as they could not tell their approximate standing on the current statement it showed that their examination consisted in glancing at the report at occasions a good way apart. Five men knew their approximate standing but there is a possibility that three of these were informed in advance that we were making an investigation.

Of nine master mechanics interviewed eight did not use the reports and recommended discontinuance, one said it was one of the most important reports.

Eight road foremen were interviewed, of whom six did not use the reports and recommended their discontinuance, while one used and recommended discontinuance, and one used and made no recommendation as to discontinuance.

These reports were discontinued.

On any railroad there are a large number of engineers who are as conscientious and as capable as the officials who supervise them. This class does not need much supervision and an inaccurate individual fuel performance record is of no value in bringing about greater fuel economy in their case. There is a second group of men who are as conscientious, but not as capable and could be appealed to through an accurate statement, but not through one which is inaccurate. The third class as I see it is not conscientious; is subdivided between both capable and incapable. This class, though small in number, requires an excessive percentage of the road firemen's time. Something could be done with this group if an accurate individual fuel performance record were available, but an inaccurate record is of no value.

It seems to me that the smallest unit on which to base a fuel performance record, is the division until such time as an accurate record of the coal used by each engineman is obtainable. The statement using the individual engine as the unit is slightly more accurate than the statement using the engineer or the fireman as the unit, as there are a lesser number of engines than engineers or firemen. However, the principal advantage of making an individual engine fuel performance record in place of an individual engineman's fuel performance record is that the engines cannot talk back and tell you how inaccurate is the statement.

Nothing herein should be construed as not advocating working on the individual engineer and individual fireman to obtain the greatest fuel economy, but working through the medium of an inaccurate individual engineman's performance record is not advocated and should be discouraged.

Report on Fuel Accounting

If we are to form a proper basis for checking fuel, and if we are to measure economy in its use, we must know that our fuel is purchased, distributed and accounted for under well defined methods. At the present time many roads are paying at least a 400 per cent increase in the price of their coal or oil based on 1915 prices, which further emphasizes the importance of accurate accounting.

At the outset it is the recommendation of the committee that fuel accounting be handled by the auditing department. This does not affect separate organizations or departments which handle the purchase, inspection, nor use of fuel. Every railroad engaged in interstate commerce is guided in its final accounts by certain rules and regulations laid down by the Interstate Commerce Commission. The accounting department of every railroad understands these regulations and knows how to meet the requirements with regard to the allocation of fuel charges to operating expenses. Therefore, all forms used in connection with fuel accounting, are designed to meet these ends.

After the general purchasing agent has arranged contracts for delivery of coal, a mine manifest should be rendered daily to cover all coal shipped, showing destination, waybill reference, kind of coal, car number and initial, and gross, tare and net weights, one copy going to the fuel supervisor and one to car service department or the party handling the distribution of coal. The coal contractor should forward to general purchasing agent an invoice for all coal shipped, who will approve as to price, etc., and pass to the accounting department.

After arriving at distributing or junction point, a diversion report is compiled for the party handling distribution, showing car number and initial, original waybill reference, point to which diverted, shipper, and to whom and why diverted.

After the coal has arrived at the unloading station, the coal dock foreman must inform the fuelkeeper of the amount of coal received and unloaded so that he can render a daily report to the accounting department, with copy to the fuel supervisor; the accounting department to check receipt against invoice before passing for payment. The coal tickets covering issues to locomotives are handled by the coal dock foreman and passed to the fuelkeeper each day. The form for reporting coal received and unloaded provides for showing the waybill reference, the weight of the coal, and the amount unloaded is carried forward from day to day so that the report at the end of the month will show the total amount of coal delivered to locomotives, or otherwise charged out at the station where unloaded. There should be a place provided on the reverse side of the daily unloading report for showing all cars on hand not unloaded. From this and the diversion reports information to locate every car is available.

As coal is generally put through chutes with no weighing device and as estimates of issues to individual locomotives necessarily follow, some adjustments will be required to balance with the inventory. A ten day or shorter period trial balance is therefore the solution in order to correct discrepancies before they become thirty days old, rendering the adjustments so heavy that the accuracy of charges to the individual locomotives and classes of service might be questioned.

Coal spilled at chutes should be picked up every day, if possible, and put back into the chute. If it is not possible to do this with some type of chutes, it should be done at least as often as trial or regular balance is taken, so that the report at the end of the month would show a balance requiring minimum adjustments.

A careful record should be kept of coal issued, and to do this it is necessary to keep before the fuelkeeper a working sheet on which the days of the month are shown, with headings covering every known use of fuel, on which fuelkeeper should be required to show distribution every day, so that at the end of the month the various items may be added and made ready for the balance sheet.

The balance sheet should provide a place for showing inventory and coal received and disbursed for all purposes. This report, with the tickets supporting the issues to loco-

motives, should be forwarded to the auditing department promptly after the close of each month, but only after the fuelkeeper has checked the agent's record to see that he has accounted for every car of coal reported by the agent to the auditor of freight accounts as being unloaded at his station.

To avoid omitting in the report of fuel received the cars under load at the closing period, it is essential that a record be maintained of cars received but not unloaded.

For distribution of fuel to locomotives, a separate form should be used which will show allocation of fuel to each individual locomotive, subdivided as between various classes of service in which the locomotive may make mileage. The form should accompany the balance sheet and will permit the auditing department to make proper charge of fuel to every locomotive.

Fuel oil, which is in general use on many of the western and southwestern roads, should be accounted for under the same basic principles as outlined above.

The report is signed by J. N. Clark (Sou. Pac.), Chairman; R. R. Hibben (M. K. & T.); R. E. Jones (D. & I. R.); C. F. Ludington (Crescent Coal Co.); Joseph McCabe, (N. Y., N. H. & H.); Hugh McVeagh (Big Four); C. F. Needham (Grand Trunk); H. E. Ray (A., T. & S. F.), and W. J. Tapp (D. & R. G. W.).

Address by Eugene McAuliffe

Eugene McAuliffe, president and general manager, the Union Colliery Company, in an address before the Association spoke of the effect on the quality of railway fuel of the purchasing practices of the more discriminating users, such as public utilities and large industries, the result being an increasing volume of inferior coals which are dumped on the railroads. In this connection Mr. McAuliffe said:

"Whatever progress the coal industry is making toward better coal is almost wholly due to the industrial, utility and domestic demand and the inferior product is flowing in a growing stream toward the railroad bunkers. Is there a railroad in the United States that has ever attempted to weigh the result of an excessive ash content on its total train mile costs? Does any railroad know in what ratio a growing ash content runs against fuel economy? Most of the large utilities do; . . . "

In discussing the effect of the "peaks and valleys" of business on the load factor of the mines and the railroads, Mr. McAuliffe spoke in part as follows:

The load factor of a man, a machine, a factory, a mine, a railroad, is the ratio of the average output (in the case of a railroad expressed in gross ton and passenger miles) to the potential capacity. Do we not as a nation ignore this important factor, with the result that our stand-by losses are tremendous? It is the stand-by losses that are killing the railroads today, yet nothing is done to level the peaks and the valleys of the industrial curve; one year we fight and struggle for output at the expense of quality, building up a tremendous machine that largely stands idle during a subsequent period of depression, only to repeat the operation at recurring periods.

There is a lack of co-ordination between the carriers and the coal industry, although the traffic relation approximating 37 per cent of the gross freight ton-miles, and the purchase relation totaling from 25 to 28 per cent of the bituminous coal production, would seem to warrant a complete entente cordiale. What are the railroads doing to regain and accelerate the upward trend of the fuel economy curve? The application of brick arches, superheaters and perhaps feed water heaters is of necessity moving slowly. These instrumentalities call for capital investment. On the other hand, a broader study of the whole coal problem and a serious attempt to improve the load factor on the mines, on mine labor and on that portion of the railroad equipment and facilities that is devoted to the transportation of coal would save millions of dollars annually and would reduce capital investment millions of dollars. The load factor on the railroads is at present running from 65 to 70 per cent, on the bituminous mines 50 per cent and on mine labor 40 per cent. This situation insofar as the actual cost of producing coal is concerned is costing at the present moment not less than one dollar per ton or one-half billion dollars annually; the carriers' loss in load factor is expressed in idle cars and locomotives, decimated work forces and an operating cost approaching 100 per cent of gross earnings; the coal miners' and coal operators' loss is expressed in terms of idle men and mines, offset in part by a rate of wage and a selling price far above what they should be, while the collection of profits is deferred.

In support of the statement that a greater community of interest between the railroads and the coal industry is essential, the study of the relative weight of coal produced in 1918 and the other heavy commodities handled by the railroads, is shown in the table.

RATIO OF THE VOLUME OF OTHER PRODUCTS HANDLED BY THE RAILROADS TO COAL

	Net tons	Ratio in per cent
Coal Production—		
Anthracite	98,826,084	14.6
Bituminous	579,385,820	85.4
Total	678,211,904	100.0
Other commodities compared with coal—		
Farm products: wheat, corn, oats, rye, barley, potatoes	163,176,298	24.0
Lumber, all grades	63,780,989	9.4
Basic metals: steel, copper, lead, zinc	51,829,281	7.6
Total	278,786,567	41.0

Coal, because of its immense demand on the carriers for transportation occupies a position that not only merits but demands serious study, and the fullest measure of co-operation.

The load factor on the coal mines, on coal labor and on the carriers can be improved by the simple process of paying the public for the service rendered through the simple medium of lower freight rates on coal in the summer months, with a corresponding increase in the winter months; this principle can be further extended to our common advantage, by granting seasonal rates on all building material such as sand, gravel, rock, tile, lumber, etc., that enter into the construction of buildings and highways.

Business decries government regulation and control—I am unalterably opposed to both—but are not our reactionary tendencies forcing the public to "build a fire under the mule."

Other Papers

A number of other papers and reports were also presented. These were Fuel Economy—A Few Essentials, by Carl Eduard Uddenberg (State Railways of Sweden); Oil Shale as a Source of Oil Supply, by Martin J. Gavin (Bureau of Mines); Cost of Production of Coal, by Mont B. Morrow (Canmore Coal Company, Ltd.); Report on Briquettes and Sub-Normal Fuels, E. E. Ramey (B. & O.), chairman; and Report on Firing Practice, M. A. Daly (Nor. Pac.), chairman.

Other Business

One of the features of the meeting which received favorable comment on several occasions was the presence of eight engine crews, one from each division of the Atlantic System of the Southern Pacific. These men, who have had the best fuel records on their respective divisions during the past three months were sent to the convention by the management as a mark of recognition for the results they have obtained in their efforts to save fuel. This is a part of the newly developed plan of division fuel committee organization on the Southern Pacific System.

During the convention Harrington Emmerson distributed to the members copies of a summary of the Interstate Commerce Commission railway fuel report for 1920 which he had pre-

pared showing the costs of the various kinds of fuel on an equated heat unit basis.

On recommendation of the Committee on Constitution and By-Laws, the annual dues of the association were raised $1 a year.

The following officers were elected for the coming year: President, W. L. Robinson (B. & O.); vice-presidents, J. N. Clark (Southern Pacific), M. A. Daly (Northern Pacific), and W. J. Bohan (Northern Pacific); members of the Executive Committee: H. T. Bentley (C. & N. W.); D. I. Bergin (Wabash), C. M. Butler (A. C. L.), J. W. Dodge (Illinois Central), Joseph Keller (Lehigh Valley), and Hugh McVeagh (Big Four).

Chicago was unanimously chosen as the place for the next convention.

Percentage of Wage Reductions Ordered by Labor Board

THE PERCENTAGES of the decreases in wage rates which were ordered by the Railroad Labor Board on June 1 show varying amounts ranging from as low as 7 to as high as 20 per cent. The following table shows former rates, present rates, and amount and percentage of decrease:

DECREASES ORDERED BY THE RAILROAD LABOR BOARD

1	Average daily rates 2	3	4	5	6
Class of employee	Dec., 1917	U. S. Railroad Administration	Present rates	Decreases ordered by Labor Board	P. c. of decrease in basic wages
Supervisory Forces—					
Yardmasters	*$151.12	*$239.38	*$269.98	*$16.32	*6.1
Yardmasters' assistants	143.45	208.65	239.25	16.32	6.8
Train dispatchers and directors	149.76	236.32	262.84	16.32	6.2
Clerical and Station Forces—					
Clerks (2 years or more experience)	2.89	4.21	5.25	.48	9.3
Clerks (1 year or more experience)	2.89	4.21	5.25	1.04	19.8
Clerks (less than 1 year's perience)	2.89	4.21	4.73	.52	11.0
Train and engine crew callers, train announcers, gatemen and baggage and parcel room employees	1.95	3.05	4.09	.80	19.5
Office boys, messengers, chore boys and others under 18 years of age filling similar positions	1.41	2.57	2.97	.40	13.4
Janitors, elevator and telephone switchboard operators, watchmen, employees assorting way bills, etc.	2.23	3.33	4.13	.80	19.3
Freight handlers and truckers	2.23	3.33	4.29	.48	11.2
Sealers, scalers and fruit and perishable inspectors	2.23	3.33	4.37	.48	11.0
Stowers or stevedores, callers or loaders, locators or coopers	2.23	3.33	4.45	.48	10.7
M. of W. and Unskilled Labor Forces—					
M. W. and S. foremen	3.44	5.33	6.53	.80	12.3
Section foremen	2.53	3.94	5.14	.80	15.6
Masons and bricklayers	3.25	4.75	5.95	.80	13.4
Masons' and bricklayers' helpers	2.24	3.44	4.12	.60	14.6
Painters	3.47	4.93	6.13	.80	13.0
Carpenters	3.22	4.63	5.83	.80	13.7
Structural iron workers	3.58	5.44	6.64	.80	10.0
Section men	1.93	3.02	3.70	.68	18.4
Other unskilled laborers	2.24	3.27	3.95	.80	20.3
Foremen construction gang and work trains	3.09	4.50	5.70	.80	14.0
Other employees, construction gang and work trains	2.06	3.17	3.85	.80	20.8
Crossing flagmen and gatemen	1.64	2.65	3.33	.68	20.4
Drawbridge operators	1.95	3.24	3.92	.68	17.3
Enginehousemen	2.18	3.36	4.16	.80	19.2
Shop Employees—					
Gang and other foremen: Hourly	4.05	5.97	7.01	.64	9.1
Monthly	4.97	8.73	9.77	.64	9.1
Machinists (journeymen)	4.80	5.78	6.82	.64	9.4
Machinists (less 4 years' experience)	3.33	4.60	5.64	.64	11.3
Boilermakers (journeymen)	4.71	5.85	6.89	.64	9.3
Boilermakers (less 4 years' experience)	3.46	4.62	5.66	.64	11.3
Blacksmiths (journeymen)	4.95	5.88	6.92	.64	9.2
Blacksmiths (less 4 years' experience)	3.63	4.64	5.68	.64	11.2
Sheet metal workers (journeymen)	4.40	5.77	6.81	.64	9.4
Sheet metal workers (less 4 years' experience)	3.19	4.67	5.71	.64	11.2
Electrical workers (journeymen)	4.15	5.71	6.75	.64	9.5
Electrical workers (less 4 years' experience)	3.22	4.53	5.57	.64	11.5
Carmen	3.58	5.44	6.48	.64	12.0
Carmen (less 4 years' experience)	2.68	4.30	5.34	.64	11.9
Molders (journeymen)	4.88	5.76	6.80	.64	9.4
Molders (less 4 years' experience)	3.14	4.58	5.62	.64	11.3
Helpers—all crafts	2.85	3.96	5.00	.64	12.8
Helper apprentices	3.11	4.06	5.10	.64	12.5
Regular apprentices	1.84	2.76	3.80	.64	16.9
Car cleaners	....	3.60	4.00	.82	20.5
Telegraphers, Telephoners and Agents—					
Telegraphers, telephoners and block operators	2.78	4.50	5.30	.48	9.5
Telegraphers - telephoners operating interlockers	2.91	4.67	5.47	.48	8.7
Levermen-non telegraphers	2.35	4.16	4.96	.48	9.7
Telegrapher-clerks	2.40	4.39	5.19	.48	9.2
Agent-telegraphers	2.50	4.61	5.41	.48	8.8
Station agent-non telegraphers	2.81	4.67	5.47	.48	8.7
Station agents (small non-telegraph station)	2.81	4.67	5.07	.40	7.9
Engine Service Employees—					
Passenger engineers and motormen	4.39	5.68	6.48	.48	7.4
Passenger firemen and helpers	2.68	4.18	4.98	.48	9.6
Freight engineers and motormen—through	5.18	6.65	7.69	.64	8.3
Freight engineers and motormen—local	5.38	7.04	8.08	.64	7.9
Freight firemen and helpers—through	3.38	4.85	5.89	.64	10.8
Freight firemen and helpers—local	3.36	4.98	6.02	.64	10.6
Yard engineers and motormen	4.27	5.71	7.15	.64	8.9
Yard firemen and helpers	2.66	4.23	5.67	.64	11.3
Hostlers	2.65	4.35	5.79	.64	11.0
Hostler helpers	2.50	3.60	5.04	.64	12.7
Train Service Employees—					
Passenger conductors	4.45	6.00	7.00	.60	8.6
Passenger baggagemen	2.75	4.16	5.16	.60	11.6
Passenger flagmen and brakemen	2.59	4.00	5.00	.60	12.0
Freight conductors—through	4.08	5.40	6.44	.64	10.0
Freight conductors—local	4.47	5.92	6.96	.64	9.2
Freight brakemen and flagmen—through	2.75	4.08	5.12	.64	12.5
Freight brakemen and flagmen—local	3.00	4.48	5.52	.64	11.6
Yard foremen	3.77	5.34	6.96	.64	9.2
Yard helpers	3.42	5.01	6.48	.64	9.8
Switchtenders	2.62	4.00	5.04	.64	12.7
Stationary Engineers, Firemen, Etc.—					
Stationary engineers (stm)	2.18	4.51	5.55	.64	11.5
Stationary firemen (steam)	2.18	3.73	4.77	.64	13.4
Boiler room water tenders	2.18	3.36	4.16	.48	11.5
Engine room oilers	2.18	3.73	4.77	.64	13.4
Coal passers, boiler room	2.18	3.36	4.16	.48	11.5
Signal Department Employees—					
Signal foremen—signal inspectors	4.20	6.00	7.04	.64	9.1
Assistant foremen	4.00	6.00	7.04	.64	9.1
Leading maintainers—gang foremen and leading signalmen	4.00	6.00	7.04	.64	9.1
Signalmen—signal maintainers	3.36	5.34	6.38	.64	10.0
Assistant signalmen—assistant signal maintainers	3.00	4.40	5.44	.64	11.8
Helpers	2.50	3.92	4.72	.48	10.1
Marine Department Employees—					
Masters or captains	*149.62	*186.50	*215.47	*15.47	*7.1
Mates or first officers	82.30	124.40	151.56	21.50	14.2
Pilots	131.05	164.38	194.38	....	...

*Monthly basis.

Columns 1, 2 3 and 4 are from "Wage Report No. 1," prepared by the Railroad Labor Board.

RAIL WAGE COST TO THE PUBLIC.—What the Adamson law and government operation did to the American public, then, in plain arithmetic, was to increase the average American family's assessment for railway wages from $75 a year to $200 a year. They took an extra $125 a year out of every family in the United States to put into the pay envelopes of the railway workers. That is cost of living for you!—*N. Y. Herald.*

Railroad Hearings Before Senate Committee

Testimony of Edward Chambers, H. E. Byram and Samuel Rea— Many Classes of Freight Show Increased Shipments

WASHINGTON, D. C.

TESTIMONY ON BEHALF of the railroads has been presented before the Senate Committee on Interstate Commerce during the past week by H. E. Byram, president of the Chicago, Milwaukee & St. Paul; Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, and Samuel Rea, president of the Pennsylvania.

Mr. Chambers testified before the committee on May 26, 27 and 31. He discussed the traffic and rate phases of the railroad problem in more detail than they had been developed by the executives who had preceded him and rather surprised the committee by outlining the extent of the readjustments in rates already made. Members of the committee also were especially interested in the facts which he produced regarding the causes for the business depression and the comparatively minor effect of the increase in rates. An abstract of Mr. Chambers' prepared statement follows:

Diminished Traffic Not Result of Increased Rates

Statement by Edward Chambers, Vice-President, Atchison, Topeka & Santa Fe

An examination of the facts shows, to my mind, two things:

1. That "the diminished volume of traffic" mentioned in Point 3 of the Senate Resolution has not resulted from the Interstate Commerce Commission's order in Ex Parte 74, in which the commission undertook to provide the adequate revenue for carriers required by the Transportation Act.

2. That, therefore, "the best means..... of reducing freight and passenger rates" mentioned in Point 5 should not be considered at this time as the subject of general action by either Congress or the Interstate Commerce Commission. The present rates as a whole are not excessive under existing conditions. Until operating costs are reduced or business revives sufficiently to produce the net revenue which the carriers should have under the Transportation Act no general reduction in rates can be made. From my knowledge of the causes of the business stagnation which became marked at the beginning of the present calendar year no reduction of rates that could be made now would stimulate traffic sufficiently to produce the revenue which is needed.

Thousands of Rates Already Reduced

Reductions in rates to bring about necessary readjustments are going on daily throughout the country by dealings directly between the shipper and the railroad traffic man. While many complaints and statements of a general character have been issued regarding the effect of the higher freight rates, those, however, are very insignificant in number compared with the number of adjustments made effective as a result of direct negotiations between carriers and shippers. The records of the Interstate Commerce Commission show that approximately 10,000 freight tariffs are filed each month, many covering a number of rate changes. Contained in those tariffs are many voluntary changes made by carriers filing direct with the commission and by bureaus established by carriers to publish competitive rates. Late reports from those bureaus show results of cooperation between carriers and shippers in restoring relationship and removing discriminations or inequalities and providing rates for new industries. The reports show:

Western Trunk Line Committee (*Chicago*).—Twelve hundred subjects considered since June, 1920, and 1,000 acted upon; over 90 per cent were reductions and nearly all affect rates under Ex Parte 74. Two hundred applications are still pending, 209 public hearings held; most of the reductions are on raw materials, such as crushed rock, gravel and other building materials, and grain, coal and lumber.

Southwestern Freight Bureau (*St. Louis*).—September 1, 1920, to May 1, 1921, number of subjects considered, 812; number of conferences held, 34; number of subjects considered at public conferences, 112. Subjects on the docket pending consideration which propose reductions, 491; subjects which propose advances, 48; total number of subjects for consideration, 539. Number of subjects pending presented by shippers, 363; number of subjects presented by carriers, 176. The changes are principally reductions and apply upon stone, lumber, sand and gravel, brick, cement, fresh fruits and vegetables, and various other commodities.

Pacific Freight Tariff Bureau (*San Francisco*).—Approximately 16,000 rate changes, of which 11,000 are reductions, balance increases, made by this bureau since Ex Parte 74 decision. Most of these are reductions caused by extending all rates in certain tariffs to apply from new points of origin. The majority of increases are in state rates awaiting approval of state commissions.

Trans-Continental Freight Bureau (*Chicago*).—Number of changes made through this bureau since Ex Parte 74, approximately 236, which includes 63 changes awaiting publication. During that time 150 conferences with shippers on rate matters were held. Where there is a change in rate involving more than one tariff we have called it one change; likewise changes in number rates have been considered one change. If we should count each rate changed it would run up to many thousands. In other words, we have considered each adjustment of rates one change regardless of the number of rates involved or the number of tariffs affected.

Trunk Line Association (*New York*).—Have received since September 1 last, 2,472 rate proposals and have issued 2,266 recommendation advices, each representing approval of from one to several hundred changes in specific rates, all proposals being published in public docket and conferences with shippers arranged if requested. Only 20 public hearings have been called for.

Central Freight Association (*Chicago*).—Since August 25, 1920, have had approximately 60 conferences with shippers on rate matters; commodity rate changes comprise approximately 3,500 origin point changes and 7,500 destination point changes.

New England Freight Association (*Boston*).—Have considered 619 freight rate proposals and have issued recommendation advices on approximately 500. All proposals initiated by New England members have been published in public docket and trade journals, and on request of shippers 15 public hearings have been held in addition to innumerable informal conferences with individual shippers. It is impossible to make any estimate of number of rate changes involved.

Southern Freight Rate Association (*Atlanta*).—Since Ex Parte 74 our committee has published 1,835 rate advices authorizing changes in rates. Some of those involve change in only one rate, though frequently each rate advice involves a considerable number of changes. We hold conferences with shippers one day out of every week.

The railroads should be allowed to work out traffic problems by dealing directly with shippers or their organizations, aided where necessary by the Interstate Commerce Commission. In every case of disagreement the commission has ample authority under the Transportation Act to dispose of the question promptly. The railroad traffic man is always ready to hear from and confer with the shipper. He is just as anxious to have commodities moving as the shipper is, and can be relied upon to give proper consideration to the commercial conditions surrounding the situation.

When the commission authorized in Ex Parte 74 the present rate adjustment it requested the carriers to give consideration to any disturbances of recognized relationships which might follow and to take immediate steps to correct them. That injunction has been promptly followed wherever variations of former recognized relationships resulted from the application of the percentages prescribed, or where it appeared that the rate was prohibitory, as has just been shown by reports from freight tariff publishing bureaus; the commission, at the request of carriers, retaining jurisdiction over Ex Parte 74 for the purpose of cooperating in and approving of the adjustments agreed to between the carriers and the shippers. Many adjustments have been satisfactorily worked out between shippers and carriers, and conferences are going along in different sections of the country and good results are being obtained. Wherever it is desirable to have the informal help of the Interstate Commerce Commission in adjusting these matters, it is promptly extended.

Class Rates

The less-than-carload tonnage moving under class rates is about 4 per cent of the total freight tonnage of the country,

and yields about 13 per cent of the total freight revenue. The average haul is about 200 miles. The longer haul of less-than-carload freight is on articles of the higher class, such as drygoods, boots and shoes, and clothing. The shorter less-than-carload haul is of the heavier freight or lower grades, which moves an average distance of about 100 miles, such as canned goods, sugar, and salt.

The increase of less-than-carload rates has not disturbed the sources of distribution. The amount of the increase applied to the unit purchased by the individual cannot fairly be claimed to be an undue burden, and certainly not prohibitory. As illustrative of the small factor which rates are in the cost of staple goods to the consumer, it may be mentioned that the American Stores Company, dealing in groceries and family supplies, on gross sales of $103,059,000, paid in 1920 in freight and express charges, $637,000, or 6 cents on each $10 of sales.

The less-than-carload traffic is the most expensive handled by carriers. Its car loading is light, the average throughout the country being only about 7 tons. The movement usually calls for transfers en route as well as handling at points or origin and destination, all at the expense of the carrier, and the commodities are exposed to theft and damage to a greater extent than any other traffic.

Carload traffic under carload class rates constitutes only a small part of the total carload movement, being of the high-grade manufactured articles where the rate is not an important factor in the selling price. There has been little or no complaint from the shippers using the class rates, either carload or less-than-carload.

The class rate adjustment, both carload and less-than-carload, throughout the country is in no way uniform. For example, in Trunk Line territory there are 59 different class rate scales; the scale on no one railroad is uniform, and no two railroad scales are alike. It may appear in certain sections that the long-haul rates are rather high, but many of the lower rates as they stand today are unreasonably low, particularly for short hauls, and do not bear a fair share of the transportation burdens. The Interstate Commerce Commission, since the passage of the Transportation Act, which gives it power to fix the minimum as well as the maximum rate, is correcting many of those situations and bringing about reasonable, uniform rates and in time will, I assume, correct them all.

Commodity Rates

Approximately 85 per cent of the commercial tonnage of the railroads of the United States moves under commodity rates made to fit commercial conditions on the basis of what the commodity can reasonably and fairly bear in distribution, that is to say, on the value of the service to shippers. The great staples, such as grain, lumber, fruits and vegetables, live stock, and coal, move to market almost entirely under commodity rates. These rates are the most important. While distance is an important factor, it cannot always be controlling if we are to continue the development of the country as a whole. Adjustment of commodity rates to extend sources of supply and develop markets often requires the same rate from the more distant producing point to market as is charged from a nearer source of supply. In fixing a rate on a commodity so that it may reach certain markets often consideration must be given to what that source of supply can afford to pay in the way of freight rate in excess of the rate paid by the nearer source of supply shipping to the same market. For example, the fruit and vegetable growers in California, shipping 3,000 miles to the New York market, must compete with Florida and Texas in the same market, the distance from Florida being 1,100 miles and from Texas 2,000 miles to New York. If these rates were not thus made eastern and central markets, now depending upon Florida, Texas and California, would still be obliged to draw many food products from foreign countries, as they did before the railroad rate adjustments, constructed on theory of what the traffic could bear (rather than what would be required fairly to compensate the carriers for the service), drove out of American markets foreign food products by directly contributing to the development at home of oranges, lemons, grapes, raisins, olives, nuts, dried fruit, figs and canned goods. Without this method of commodity rate adjustment the far western section of the United States, in particular, would not have been changed from an isolated grazing region into one of the most richly productive and highly populated agricultural areas on the continent.

I come now to the particular commodity rates of which there has been some complaint in the press and elsewhere, and shall speak of coal, lumber, grain, fruits and vegetables, live stock, road material, iron ore and some others. Passenger fares also will be discussed. I have already mentioned that 85 per cent of the commercial tonnage is moved under commodity rates, and of this more than three-fourths consists of comparatively few commodity groups. This is mentioned to impress upon the committee the fact that any general reduction in the rates on the important commodities moving would mean a considerable volume of revenue taken from the carriers.

Coal

Coal and coke, in round figures, furnish 40 per cent of the commercial tonnage moved by the railroads. I have seen no direct statement that the movement has been prevented by the increased rates. In complying with the order of the commission in Ex Parte 74, carriers preserved the recognized relationships which had existed as to point of production. This was about all the shippers asked for at that time. The greater production is in the territory east of the Mississippi and north of the Ohio river. In this Eastern section is also located approximately 85 per cent of the manufacturing of this country. It also contains one-half or more of the country's population. The manufacturing plants that are the greatest consumers of fuel are usually located close to the source of supply and therefore pay the minimum fuel rate.

The movement of coal and coke for each quarter of 1920, during the last of which quarters the higher rates were in effect, was as follows:

	1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
Bituminous	90,622,867	83,152,797	100,569,875	110,522,085
Anthracite	17,304,993	19,300,597	19,148,533	21,224,244
Coke	7,075,275	6,032,255	6,905,008	6,871,501

The freight rate does not show any unreasonable relation to the delivered price, and it cannot be shown that in any of the territories it is preventing the resumption of industrial operations or otherwise prohibiting movement. While the rates on coal as well as the price thereof are low in comparison with those on many other commodities, the percentage relation of the rate on coal to the delivered price must necessarily be greater than with respect to articles of higher value. Fluctuations in the price of bituminous coal during the past two or three years have ranged greater than the entire freight rate. The cartage charged and the charge from the pavement to the cellar in the principal cities in the eastern section are frequently as great as the average freight charge.

Lumber

The principal sources of supply of lumber are the Southern and Gulf states and the Pacific Coast states. The rates as increased by Ex Parte 74 from Pacific Coast territory to Chicago and West were recently, after several conferences between shippers and carriers, readjusted to fit competitive commercial conditions by reducing the rate to Chicago and to the Mississippi river from 80 cents per 100th to 73 cents, and to Kansas City and Omaha from 73 cents to 66½ cents, the rate to St. Paul and Minneapolis remaining unchanged at 66½ cents. From the producing territory intermediate to the Pacific Coast the recognized relationships which had been thrown out of line by the percentage increase were restored. This adjustment is reasonably satisfactory to the interested shippers, and lumber is moving under the rates to the extent the markets will take. The reports received indicate that the Pacific Coast lumber shippers are rather disappointed in the effect the reduced rate had upon the movement. It is no better now than it was before the rates were reduced. The Southern and Gulf lumber shippers advise of a slight improvement in the demand, but generally the conditions in the common markets are the same in respect to the Southern and Gulf lumber as prevail on the Pacific Coast lumber.

There was also complaint from the Pacific Coast and interior lumber manufacturers with respect to the disadvantage at which they claimed to be placed in seeking business in the eastern territory. Their complaint was largely confined to the advance of rates to markets east of the Mississippi river and north of the Ohio. The advance in rates on a percentage basis disturbed the relationships that had prevailed. Conferences between traffic representatives of interested railroads and the lumber shippers have been held looking to a satisfactory rate adjustment to their territory.

After rates from the Pacific Coast states were readjusted the Southern and Gulf states asked for similar action to territory Chicago and West, or for an adjustment that would leave their rates in cents per hundred pounds below the rates from the Pacific Coast to the extent that they were lower as a result of the Ex Parte 74 percentage increases. This request is now under consideration by the interested railroads. Several conferences have already been had with shippers, and while no conclusion has yet been reached, it is safe to say that some readjustments will be made. The Southern and Gulf states lumber shippers reach the Chicago market today at a rate of 44 cents per hundred, Mississippi river at 36 cents per hundred, Kansas City 39 cents per hundred, and Omaha 42.5 cents. No claim has been made by these southern shippers that the increased rates prohibit the movement of lumber. Their request is for a readjustment of their rates based on what they consider competitive commercial conditions.

The average revenue per ton from lumber for the United States

as a whole is at present about $5.20. The movement in tons of forest products for each quarter of 1920, during the last of which quarters the higher rates were in effect, was as follows:

1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
25,575,364	26,448,627	26,585,525	23,003,693

Figures for the month of April so far received indicate that the lumber business in all sections is improving.

The foregoing consideration of the facts shows that the advance in Ex Parte 74 did not prohibit the movement of lumber, and this view is confirmed by recent editorials in the American Lumberman and the Mississippi Valley Lumberman, representing the lumber interests.

Grain

Knowing that on account of the delicacy of the grain-rate adjustment the percentage advance allowed in Ex Parte 74 would disrupt some recognized relationships, the Interstate Commerce Commission directed that any such disarrangements be corrected by the carriers in the first supplements after their publication of the advance. This direction was carefully and promptly followed.

We have about completed the readjustment of the grain and grain-products rates at the different primary markets and at the Gulf and Atlantic ports for export. In this readjustment some reductions had to be made. To afford the grain and its products the widest benefit of the competition of markets, freight rates are so adjusted that in moving the grain forward from the field to the primary markets and from one market to another, or from intermediate mills to ultimate destination of the grain products, the through rate from point of origin to final destination is protected. This arrangement permits the millers at intermediate points to purchase grain, stop it at their mills, grind it and ship the product thereof, not on the sum of the rates in and the rates out, but on the through rate from point of origin of the grain to the ultimate destination of the product, provided this transaction takes place within one year following the date of the initial movement. This is a very valuable privilege in marketing grain, and although the rates were advanced on August 26, 1920, these advances have not been applied on any grain which was in transit prior to that date.

The average haul and the average charge per hundred for the country as a whole are as follows:

	Average haul		Average rate	
	Grain, miles	Flour, miles	Grain, per 100 lbs.	Flour, per 100 lbs.
Country as a whole	498	630	24.8 cts.	29.25 cts.

That table shows a freight rate of 15 cents per bushel on wheat.

The movement in tons of grain and grain products for each quarter of 1920, during the last of which quarters the higher rates were in effect, was as follows:

1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
18,425,211	14,284,051	19,251,813	18,043,760

The exports and imports of wheat in bushels for three years, ending with 1920, during the last quarter of 1920 the higher rates being in effect, were as follows:

	1918, Bushels	1919, Bushels	1920, Bushels
Exports	111,177,103	148,086,479	218,280,231
Imports	17,035,986	7,910,701	35,848,648

Comparing December, 1919, with December, 1920, the exports and imports of wheat were as follows:

	1919, Bushels	1920, Bushels
Exports	9,519,706	25,896,270
Imports	309,182	11,275,104

The average fluctuation *weekly* in the price of wheat at Chicago in 1919 and 1920 was nearly 10 cents per hundred. The monthly and yearly fluctuations in price of grains, of course, amounts to many times the increase in freight rates. All irregularities of recognized rate relation have been worked out by the carriers to the satisfaction of shippers; and the experience shows that the thing to do is to leave any remaining adjustments to be worked out by the co-operation of the carriers, the shippers, and the Interstate Commerce Commission. My consideration of the grain subject convinces me that the freight rate has not impeded the movement.

Fruit and Vegetable Shipments Increased Under Higher Rates

The markets of the common vegetables, such as potatoes, onions and cabbage, are well established and the distribution usually follows normal and well-understood trade channels. Potatoes, onions and cabbage make up the greater proportion of the total vegetable tonnage of the country and are produced everywhere. The government market reports show all markets well stocked with these vegetables and at times over-stocked. Potatoes, onions and cabbage carry the lower vegetable rates. This traffic shows a substantial increase in movement over last season under the higher freight rates this season.

The winter producing sections for higher class vegetables are Florida, California and Texas. These sections go to markets largely east of the Mississippi river and north of the Ohio. The extreme eastern markets of New York, Boston and Philadelphia take a very considerable part of these vegetables. California and Florida, for example, ship celery, cauliflower, asparagus and lettuce to all the large markets in the Middle-West and Eastern territory. These high-grade vegetables require the very highest class of service. The movement shows about the same average of increase as in the case of the lower class of vegetables. These vegetable shippers have complained to the carriers and the Interstate Commerce Commission that the rates applied are excessive. The commission has given some informal consideration to the complaint. The carriers also have held conference with the shippers and the matter is now under consideration for final disposition.

Florida and California citrus fruit shippers have complained to the carriers and the Interstate Commerce Commission that prices received at destinations are not equal to cost of production and cost of transportation combined. The interested carriers have had several conferences with the citrus fruit shippers in regard to the volume of the rate now charged, but as yet no definite action has been taken. The commission, however, has lately instituted a very far-reaching informal investigation of the conditions in the citrus fruit, deciduous fruit, and vegetable industry of the entire Pacific Coast, which is welcomed by the carriers and which will elicit facts upon which final disposition will be made. The commission has already given informal consideration to the rates on fruits and vegetables out of Texas and Florida.

The following, taken from the records of the United States Bureau of Markets, shows the movement of fruits and vegetables from the three winter producing sections (California, Florida, and Texas), for the months October, 1920, to March, 1921, inclusive, as compared with the same period 1919-1920:

	California		Florida		Texas	
Number of carloads	1920 / 1921	1919 / 1920	1920 / 1921	1919 / 1920	1920 / 1921	1919 / 1920
Lemons	2,700	2,429	....	....	....	....
Oranges and grapefruits	12,269	12,650	22,364	18,195	....	....
Deciduous fruits	11,886	10,252	....	....	....	....
Vegetables	22,190	19,630	9,020	9,954	4,029	3,815
Total	49,045	44,961	31,384	28,149	4,029	3,815

All of the foregoing movement in 1920-1921 was under the advanced rates.

Practically all of the apples from the northwestern states have been marketed, with the exception of some small apples which cannot find a ready sale in the East. While it is true that the freight rate has considerably advanced, yet the advance in freight rates has not kept pace with the increase in the farm values of the apples, according to government reports. Although the crop in the West in 1920 was much smaller than in 1919, the total production of commercial apples of the United States in 1920 was probably the largest ever known, or 36,272,000 barrels, compared with 26,223,000 barrels in 1919. As most of the Western apples must find their markets in the East, largely in the states where there is the greatest local production of apples, it will be seen that the Western apples have been able to find a ready market at good prices, notwithstanding the immense crop in the territory where they are marketed and the advance in freight rate.

The movement in tons of fresh fruits and vegetables for each quarter of 1920, during the last of which quarters the higher rates were in effect, was as follows:

1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
2,301,651	2,248,547	3,553,533	4,902,455

Sand, Gravel and Crushed Rock

The movement of these commodities may properly be classed as local, or they are hauled but short distances and at very low rates, comparatively, and are produced everywhere. In the later years, and since drayage charges have increased so much, the cost of distribution in the city of destination is often greater than the freight charge for the main-line haul. The hauls are usually over a single line. The general conditions surrounding the production and distribution compel minimum rates. There are two terminal services to each shipment, and often one is in a large city where the switching is expensive and must be absorbed out of the main-line rate.

Modifications in Ex Parte 74 rates are being made daily throughout the country for one reason or another, the shipper dealing directly with the carrier. While we hear some complaints of excessive rates, when you consider that the annual movement of these commodities is approximately 100 million tons, scattered all over the country, the complaints we hear are insignificant com-

pared to the tonnage moving, and there must be thousands of transactions daily throughout the country where these commodities are involved. As these commodities cannot be moved at the class rates, a commodity rate must be provided for every carload movement, and new commodity rates are therefore, as a result of negotiations between shipper and carrier, being constantly published.

A conference between carriers and shippers of sand, gravel and crushed rock, or road material, will be held in Washington on June 2 at the request of the shippers, that request being the first coming to the carriers from those shippers for any general modification of the existing rate adjustment.

The average haul in the different sections and the average charge are as follows:

	Average haul	Average rate
Eastern District	65 miles	73 cents per ton
Southern District	68 miles	90 cents per ton
Western District	60 miles	74 cents per ton

The number of tons of clay, sand, gravel and crushed rock hauled in each quarter of 1920, during the last of which quarters the advanced rates were in effect, were as follows:

1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
15,766,002	25,967,455	30,548,043	26,232,054

The drayage charge at Washington for hauling sand, gravel and crushed rock within the city limits is 50 cents per ton for the first mile or less and 10 cents per ton for each additional quarter of a mile, the drayage charge for a mile and a half being as high as the freight rate for the average rail haul in the eastern district.

Cement, Brick and Plaster

These commodities move in large volume and generally for comparatively short distances. Manufacturing plants are scattered throughout the whole country; many are close to large consuming markets. There is a substantial movement now and has been right along. The movement in tons of cement, brick, lime and plaster for each quarter of 1920, during the last of which quarters the higher rates were in effect, was as follows:

1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
6,517,819	9,119,590	10,843,710	8,242,843

Livestock

Shippers have complained about the rates, particularly those on the long hauls on range cattle from the southwestern ranges to the northwest pastures. At a recent conference between the Interstate Commerce Commission, livestock shippers, and interested carriers an understanding was reached to modify the rates upon these range cattle, and the agreement has been carried out and the reduced rates are now in effect. It was an emergency proposition, but by the co-operation of the Interstate Commerce Commission the rates were quickly made effective.

The livestock movement in tons for each quarter of 1920, during the last of which quarters the higher rates were in effect was as follows:

	Cattle and Calves, Hogs, Sheep and Goats		
1st Quarter, tons	2d Quarter, tons	3d Quarter, tons	4th Quarter, tons
4,189,653	3,859,101	3,906,899	4,612,508

Reduction in Building Operations Due to Other Causes Than Rates

The conditions in the building industry throughout the country are practically uniform. In the cities on the Pacific Coast and throughout the west, south, and east conditions appear to be about the same. The general report is that a comparatively small amount of building is being done. At San Francisco, Seattle and Portland, where lumber is at the door, conditions are the same as at Kansas City, Omaha, Chicago or Cleveland. For example, Chicago has plants within its city limits which produce all kinds of structural iron and steel, likewise cement, brick, lime, sand, gravel and crushed rock, and building conditions are no different in Chicago than in the other places mentioned.

As an illustration of the relation of freight rates to building enterprises a careful study recently made of the materials going into a typical brick house of six rooms and bath in Philadelphia with the freight charges from the usual sources of supply of materials shows that the freight charges amount to approximately $370 on a house costing $8,300 to build in 1920.

In St. Paul the estimated freight charge on all material entering into the construction of a frame dwelling-house costing $5,000 or $6,000 would aggregate about $580. In making this estimate the points of shipment used are those where such materials are produced in large volume, and where the selling price is based.

Road-Making Material

Complaint has been made in a general way that the present freight rates are prohibiting road construction. The costs of a standard concrete highway, in accordance with the published requirements of the Minnesota Highway Department, and according to figures published by the Northwestern Association of General Contractors, taking as an example the Itasca County, Minnesota, Road, are as follows:

Grading, average cost per mile		$16,000.00
Freight on grading equipment to and from job	2.4%	
Freight on culvert pipe, bridge material, etc.	1.5%	
Total	3.9%	624.00
Concrete pavement to be put in later will cost, per mile		37,000.00
Freight charges on pavement material, etc.	1.9%	703.00
Total cost of road per mile		53,000.00
Total freight cost	2.5%	1,327.00

The same published report shows that the cost of laying one course concrete pavement, using railway track for haulage, is $3.61 per square yard, of which materials represent $1.73 per square yard or 47.8 per cent, labor 63 cents or 17.5 per cent, depreciation 8.6 per cent, contingencies 5.6 per cent, interest 3.6 per cent, taxes 0.2 per cent, general expense 2.9 per cent, storage 1.5 per cent, insurance 0.5 per cent, bond 1.7 per cent, freight 1.9 per cent, camp site, etc., .08 per cent, repairs 5.3 per cent, fuel and oil 2.1 per cent.

These bids are made on 21 miles of pavement, no part of which will be farther than 3½ miles from the railway site. The source of supply of material, except steel, shall be at such distance from the unloading plant that a 5-cent per hundred freight rate will apply on sand and rock.

To take an example in the East, the figures given by the Highway Commission of Pennsylvania for roads in that state are as follows:

Total cost of reinforced concrete road with hill-side brick on grades, built with light grading and local materials, $58,000 per mile, made up of the following items:

Freight charges	$6,000 per mile, or 10 per cent
Materials	15,000 per mile, or 26 per cent
Grading	9,000 per mile, or 15 per cent
Labor	13,500 per mile, or 24 per cent
Profit, insurance, etc., etc.	14,500 per mile, or 25 per cent

It can readily be seen that the freight rate is not an undue proportion of the total cost of the road. These roads do not always pay freight charges. Often the materials, except cement, are close to the work and hauled by trucks. When the railroad is used the volume is usually large and is moved by rail close to the work. The very conditions surrounding the operation compel the minimum rates on most of the materials.

Iron Ore

The rates on iron ore from the heaviest shipping ranges, the Mesabi, Vermillion and Cuyuna, in Minnesota and Wisconsin and Michigan, were not advanced August 26, 1920, under Ex Parte 74, to the upper lake ports, but they did receive an advance in 1918 under General Order 28 of the Railroad Administration.

The rates from Wisconsin and Michigan ranges were advanced this spring and there were also advances under Ex Parte 74 from the Lake Erie ports to the furnaces. Ore is sold delivered at Lake Erie ports, and the statement showing the price at Lake Erie of Bessemer and non-Bessemer ores for the years 1893 to 1920 inclusive, with the rail rates to Lake Superior and the vessel rates from Lake Superior to Lake Erie indicate that, after deducting the present rail rate to Lake Superior and the lake rate to Lake Erie, the producer receives a much higher net price for his ore than in former years.

The shipments of ore, of course, are greatly affected by the prevailing industrial conditions, especially with the steel production. For several years past shipments were as follows, in tons:

Statement of Iron Ore in Tons of 2,240 Lbs. Shipped from Ranges in Minnesota, Wisconsin and Michigan (Upper Peninsula) During Calendar Years 1916 to 1920, Inclusive

Range	1916	1917	1918	1919	1920
Marquette	5,396,007	4,874,150	4,354,207	2,992,212	4,608,323
Menominie	6,464,363	6,045,750	6,378,698	4,442,868	6,562,106
Gogebic	8,489,685	7,981,684	7,936,701	6,230,839	8,763,332
Vermillion	1,947,200	1,530,692	1,192,908	929,049	1,007,435
Mesabi	42,525,612	41,445,211	40,396,711	31,997,699	37,149,277
Miscellaneous	219,381	136,632	98,057	359,990	129,571
Cuyuna	1,716,218	2,422,884	2,478,800	1,859,865	2,191,528
Total all Ranges.	66,658,466	64,437,003	62,836,082	48,812,522	60,411,572

The movement, in tons, of iron ore and other ores for the entire United States for each of the quarters of 1920, during the last quarter of which the higher rates were in effect, was as follows:

	1st Quarter	2d Quarter	3d Quarter	4th Quarter
Iron ore	3,215,109	24,183,287	37,487,357	20,605,039
Other ores	5,219,500	6,355,047	6,283,422	3,843,791
Total	8,434,609	30,538,334	43,770,779	24,448,830
Total for year	.....	.....	.....	107,192,552

Those figures show that of the total iron ore movement over 60 per cent is produced in the northwest.

The foregoing shows that freight rates had no effect upon the movement of iron ore. At the present time there is a very light

movement of ore, due to the very large quantity moved last year, a large portion of which is still on the docks at the Lake Erie ports, mainly caused by the decline in steel production, a very small proportion of the furnaces being in operation at this time.

Passenger Travel Not Seriously Affected

While there has been considerable complaint about the increased passenger fares, the increase has not seriously affected passenger travel. Undoubtedly the increased fares have caused some letup in travel, but a reduction of the fares at this time would not increase the travel sufficiently to offset what would be lost by the reduction. The falling off has been as great in the short hauls as in the longer hauls. The present policy of the railroads to make special fares for excursions and to summer and winter tourist resorts is satisfactory, both to the public and the railroads.

The number of passengers carried for the last four months of 1920, when the higher fares were in effect, in comparison with the last four months of 1919, was as follows:

Last four months, 1919	398,576,087 passengers
Last four months, 1920	399,435,875 passengers

As showing the trend of passenger business the following earnings are given for the first two months of 1921 in comparison with the same months of 1920:

	January	February
1920	$91,874,146	$82,571,063
1921	105,295,673	88,492,533

There has been considerable objection raised to the so-called Pullman surcharge, principally because of the fact that it is a new application in this country of a theory of passenger fare-making which prevails in other countries and is applied on steamships as well as railroads. The passenger earnings of a Pullman car are practically limited to 32 passenger fares, while a coach costing one-half the price of a Pullman and weighing a third less will accommodate from 70 to 80 persons. In other words, the carrier must haul 2½ Pullman cars to accommodate the load of a passenger coach. The surcharge of 50 per cent of the cost of the Pullman ticket is a comparatively small charge for the additional space occupied and the comfort given to the passenger, and it has not lessened to any considerable extent passenger travel.

Panama Canal Traffic

Domestic freight tonnage moving between Atlantic and Pacific ports through the Panama Canal in vessels controlled by the United States Shipping Board and independent concerns is increasing rapidly. The rates have been going down steadily for the past three or four months, and there is very active and rather severe competition between the independent carriers and the vessels operated by the United States Shipping Board. This traffic, in both directions, is largely taken away from the all-rail lines. For many years past (except during the war) there has been active competition for this traffic between the all-rail lines and the steamship lines operating between the Atlantic and Pacific ports. The sailings now are entirely by the Panama Canal, which avoids transfer enroute and gives the shortest distance; therefore the water service today is more valuable than ever before. Competition between water carriers themselves has already brought rates down to an unremunerative basis, and unless something be done to stabilize the water rates it is certain that competition will force them still lower and make an unprofitable and consequently less dependable water service. And such competition will be unfair to the rail lines.

The rail lines, especially in the West, have been a necessity for the development of the country. The water carriers have not developed any considerable traffic between the Atlantic and Pacific ports in their years of operation. The business secured in the past and the traffic they are securing today is what has been developed by the all-rail lines. Necessarily, we expect this water service to continue and to take a share of the traffic adjacent to the coast, especially of the heavier commodities, that move more readily by water; but it would seem in the public interest, as well as in the interest of the competing rail lines, that the water rates be stabilized and that the Interstate Commerce Commission be given jurisdiction over them.

We also feel that for the use of the Panama Canal such charges should be made as would pay the interest on the investment and the expenses of operation. While it is true that the principal reason for the construction of the canal was for war or defensive purposes, and it was a necessity which we all recognize for the protection of our country, its use by commercial vessels, especially in domestic traffic between the two coasts, and in competition with the transcontinental lines, should pay a fair proportion of the expense of maintenance and interest on the investment in this waterway. The rail lines pay millions of dollars in taxes on their right-of-way, and it would hardly be considered fair to permit the water lines competing with them to make use of this costly right-of-way by water without paying any portion of the cost of it.

While the manufacturer on the Atlantic and Pacific coasts should be given every benefit of his water location, his advantage should not be increased by still further reducing his cost of distribution at the expense of the interior manufacturer, who will have to pay his share of taxation necessary in case the canal is not made self-supporting.

The water lines should not be restricted as to rate competition between ports in this country and foreign countries where they are in active competition with the vessels of foreign nations. But between ports of the United States, where they are privileged to handle business without competition of foreign carriers, there is no logical reason why their rates should not be under the jurisdiction of the Interstate Commerce Commission, as are those of the rail carriers with whom they compete. Reasonable rates for service on the water would then be prescribed by the commission. Such rates would yield a profit and support a regular, dependable service. This would be far preferable to spasmodic reductions in the water rates, which would result in embarrassment to competing water and rail carriers and make the service far less reliable and less satisfactory, and which would allow tramp steamers to come in for a brief period and take away desirable water business and more or less demoralize the rates and (as has been the practice in the past) leave the coast-to-coast business when they found better paying tonnage elsewhere.

Depressed Business and Railroad Rates

The present depression in business, while distressing, is no different from depressions in the past. We had one in a smaller degree in 1907. There was a great depression in 1893. None of those depressions were preceded by any general advance of freight rates and passenger fares. We had been warned to expect the present period of liquidation and the consequent depression as an aftermath of the World War. In 1914, just prior to the commencement of the war, there was a depression in business in this country of several months' duration, which had become very severe, especially in the industrial sections in the East, and promised to be of long duration and great severity, but it was cut short and turned into a period of prosperity by the heavy purchases from this country by France, England, Italy and the other allies. A very severe depression followed the armistice in November, 1918, during which the tonnage of the carriers fell off considerably. It lasted until the following June.

I feel that what I have presented sustains the claims with which I started—that is, that the advance of rates authorized by the Interstate Commerce Commission in Ex Parte 74 did not operate seriously to impede the traffic of the country, referred to in Point 3 of the Senate Resolution, and that therefore no occasion exists for any general action, as indicated in Point 5, toward reducing rates by either the Congress or the Commission.

Indeed, as before mentioned, it is not practicable to make any general reduction in rates until the railroads of the country have been put in a going condition, either by a reduction of expenses, or by an increase of tonnage, or by both.

Senator Kellogg asked if Pacific Coast lumber companies had not been making arrangements to ship their lumber to Eastern points by the Panama Canal. Mr. Chambers said they started to make such arrangements before the rates were increased and that they were trying to do more business in the Eastern territory. There is a proposition before the railroads now to reduce the rail rate to compete with the water rates to points inland from the Seaboard. He said the railroads did not expect to meet the water rates at Baltimore and New York, but had expected to adjust the rates so that a certain proportion of the lumber going into trunk line territory will move by railroad. This led to a lengthy discussion of the theory of making the water competitive rates, during which Mr. Chambers pointed out that in some cases the railroads can afford to make very low rates to get loading for cars that move one way empty. Senator Cummins remarked that his statements were rather contrary to the general understanding that the markets have not been supplied with fruits and vegetables during the period of higher rates. Mr. Chambers said the markets had been fully supplied ever since the season opened.

"It may be," said Senator Cummins, "that the larger supply that is indicated by the movement will account for the low prices received by the producers. I wanted to call attention to that because there is a very general misapprehension with regard to the moving of these fruits and vegetables during the period of high freight rates."

Mr. Chambers said that the difficulties of fruit and vege-

table producers lie largely in marketing conditions, but that the shippers say that in many cases they are not receiving in the markets enough to pay the actual cost of production plus the freight and that if this continues the amount of planting for the future will be reduced. The railroads do not want the acreage to be reduced and if the situation is as bad as the producers say something may be done about it, but the fruit and vegetable shippers must bear their reasonable share of the effects of the readjustment period and if they are getting cost the rates ought not to be reduced to a point that will transfer the loss to the railroads. He said he had known of similar cases of the same kind for many years that had very little to do with the freight rates. Senator Stanley said that if the railroads were not making money out of the rates from Florida to the Eastern markets, they must be losing still more money on the rates on the longer haul from the Pacific Coast and he thought the committee ought to investigate it. Senator Kellogg remarked that the Interstate Commerce Commission has been investigating it for 20 years. Mr. Chambers added that the present rates are based on the Interstate Commerce Commission's investigation. Referring to the recent emergency reduction in the rates on stocker and feeder cattle from the Southwestern ranges, Mr. Chambers read a telegram from one of his representatives in Texas pointing out that movement of cattle was very little increased by the reduction.

Results on the Chicago, Milwaukee & St. Paul

Statement by H. E. Byram, President, C. M. & St. P.

H. E. Byram, president of the Chicago, Milwaukee & St. Paul, appeared before the Committee on May 26 and presented a statement confined to the situation in the western and northwestern part of the country as reflected in the operations of the Chicago, Milwaukee & St. Paul. He said in part:

Unusual efforts have been made since federal control terminated to curtail expenses in every way possible, and it will be the purpose of this statement to illustrate in various ways that these efforts have been productive of results.

It is regretted that the attitude of some of those who speak for railroad employees of the country does not tend to promote good service. For some time past efforts have apparently been made to develop a belief on the part of the public as well as railroad employees that the responsible officers of the railroads were not operating them efficiently and economically and it is greatly to the credit of the rank and file of employees of the railroads of the country that they have not been misled by these false doctrines, as is shown by the general willingness to co-operate with the management of the railroads in bringing about the necessary efficiency and economy in their operation which prevails at the present time, as has been repeatedly stated by the railroad executives at this hearing.

I shall endeavor to show that the charges frequently and recently made by those critics, that the railroad managers are not alert in endeavoring to prevent wasteful practice and install economical methods, are not correct.

As a part of this testimony I submit for the record a statement showing various statistics concerning the operation of the Chicago, Milwaukee and St. Paul Railway for the years 1916 to 1920, inclusive. The total operating expenses show an increase in 1920 over 1916 of $90,932,069.93, while the net operating revenue decreased from $36,844,637.81 to $3,461,613.17. The total payroll in 1920 over 1916 increased $61,305,417.43. The average number of employees increased in 1920 over 1916 approximately 11,000 or 21.56 per cent. The per cent of payroll to total operating revenue increased from 44.49 in 1916 to 65.72 in 1920.

The total freight ton miles increased in 1920 over 1916 only 5.96 per cent. These figures indicate that although approximately the same freight ton miles were moved in both of these years 11,000 more men were required to perform the service and it cost approximately $60,000,000 more on the payroll to pay them.

The items of labor and fuel constitute 80.044 per cent of the cost of operating the railroad, these two items absorbing approximately $135,000,000 of the total of $164,000,000 operating expenses for the year 1920, and the next part of the exhibit is designed to show the enormous increase in the cost of fuel, which increased from $11,797,880.72 in 1916 to $23,796,922.14, although approximately 250,000 tons less were used in 1920. If we had been able to buy the coal used in 1920 at the price of coal in 1916 we would have saved $11,999,031.42.

The balance of the figures are designed to show that the usual measures of efficiency, viz., increased train load, increased carload, decreased locomotive miles, revenue ton miles per ton of fuel used, etc., were present in 1920 but by reason of the increased cost of labor and material and the failure to increase freight and passenger rates as operating costs increased, defeated the efforts of the operating department, and instead of producing increased net revenue, which efficient operation ought to produce, the opposite result developed, and, as shown above, the net operating revenue actually decreased from $36,844,637 in 1916 to $3,461,613 in 1920.

Taking up the details, we find that the loaded car miles decreased 83,322,054 miles, while the empty car miles increased 4,101,925 miles; but the average number of tons in each loaded car per mile increased from 20.667 in 1916 to 25.485 in 1920, or 23.31 per cent, an item of efficiency that should have produced net revenue. The total passenger locomotive miles decreased from 18,186,754 in 1916 to 16,897,163 in 1920, notwithstanding the fact that the total passengers moved one mile shows an increase of 128,527,180. The total freight locomotive miles shows a decrease of 4,105,857 in 1920 over 1916. This reduction in freight locomotive miles is reflected in the increase in train load from 503.23 in 1916 to 620.04 in 1920, or 23.28 per cent.

I believe these figures show conclusively that the measures of efficiency which usually are applied to the operation of railroads and which normally tend to produce net operating revenue, failed of their usual result because of conditions which were beyond the control of the operating staff because of the abnormally increased cost and inadequate addition to the revenue by means of increased freight and passenger rates.

Co-operation Between the Managements of Railroads and Their Employees for Producing Efficiency

The following quotation was taken from the introduction of the testimony of W. Jett Lauck before the United States Railroad Labor Board:

No far reaching improvements in railroad efficiency are possible without close co-operation between the managements of the railroads and their employees. Without the good will of their men, without a high level of morale and enthusiasm devoted to a common end, the improvements of service and the reduction of cost cannot be achieved. If the two great elements of railroad operation, management and workers, are to be forever at loggerheads, each pulling against the other, each mistrusting and condemning the other, each trying to wring concessions which the other is reluctant to grant, the outlook for eliminating the many wastes revealed in the foregoing pages is dark indeed.

We agree with the principle advocated because the officers and employees of the Chicago, Milwaukee & St. Paul for several years, and particularly of late, have been carrying out the principle of co-operation and study, mutually, in finding and practicing economies and improved practices. Committees have been formed of officers and employees on every division, and at the larger stations and terminals, with regular dates for meeting, usually monthly, to study the details of operation in each particular locality and the situation as a whole for the purpose of eliminating waste and generally promoting efficiency, and it is a pleasure to state that the various campaigns inaugurated to save fuel and supplies and to avoid wasteful practices have been promptly, intelligently and earnestly supported by the employees generally in all classes of service, indicating that the officers and employees of this company are having no difficulty in working out a program in co-operation and harmony.

During the summer of 1920, while business was good and cars in demand, a drive to increase the mileage or freight cars brought very satisfactory results. The miles per day which had been running about 22 were brought up to about 35 in September and October when the demands were heaviest. Since then the great slump in business has made it impracticable to continue this mileage as cars have been plentiful.

Notwithstanding that the number of locomotives has not materially been increased the total capacity of all locomotives has steadily and substantially increased. This is due to the fact that the locomotives that were retired were obsolete and of small capacity.

Freight cars are constantly being retired on account of decay and obsolesence. The cars retired usually are of small capacity

and are replaced with modern steel-frame cars of large capacity. Although 2427 more freight cars were retired than replaced the total capacity of all cars has increased and the average capacity per car has increased from 35.17 to 39.10 tons.

In addition to the new freight cars purchased more than 5,000 cars were overhauled during 1919 and 1920 and improved draft members, roofs, ends, etc., were applied at an average expense of approximately $1,000.00 per car, or a total of $5,000,000. This was done to bring this equipment up to traffic requirements, reduce the maintenance cost, and eliminate, so far as possible, the days lost on repair tracks, and loss and damage to lading.

Even with so large an expense for this heavy work the benefits were immediate as the 1920 repair charges were less than those for 1919, reflecting the improved condition of the freight equipment, caused by retiring old cars of small capacity and replacing them with new cars of greater capacity and the rebuilding and strengthening of cars suitable for such improvements.

Financial Results

I have gone over the various tests of efficiency which are usually applied to management of railroads except one, and have shown, by the operations of this railroad, that it meets successfully every one of these tests except the one I have so far omitted. The omitted test is the test of net financial results. It is obvious from our reports and from the foregoing statement that the net financial results of our operations have been most disappointing. As the operations of the road have measured up to the usual tests of efficiency, it is a great disappointment to find that this efficiency of management has not been reflected in satisfactory financial results, and the facts, I submit, fully justify us in seeking the cause in forces beyond our control. It is not far to seek. We find it in the expense account, which is, to a very large extent, determined by the government, and not by the company, and to a substantial extent also by economic conditions fixing the prices of materials and supplies, and thus also beyond the control of the company.

The railroad problem is, in my opinion, comparatively simple, and its solution is not difficult or at least would not be if it were possible to apply ordinary business methods to its solution. But, unlike other businesses, a railroad cannot shut up shop when business is bad, and there are certain fixed expenditures for maintenance and operation which cannot be reduced to correspond with the decreased traffic, as well as various other needs of the public which must be served whether at a loss or not. At the present time it is costing the railroads more to produce transportation than they can sell it for. Therefore, we must either increase the selling price or reduce the cost. It is obviously impossible at this time to increase the selling price of transportation above the present general level; therefore, we must reduce the cost. There are two ways of doing this, one is to increase efficiency and the other is to reduce expenses.

It has been shown by various statistics presented here that while there is always room for improvement the railroads of this country are functioning effectively and efficiently. Immense opportunity is available for further increasing economy of operation by large investments in reducing grades, double track, improving and increasing terminal facilities, additional cars and locomotives, modernizing and improving existing equipment, installation of automatic signals and safety devices, enlarging shops and engine houses, purchase of new and improved shop tools and machinery, and in many other ways, all of which require the investment of immense sums of new capital, which cannot be obtained unless the net earnings of the railroads are such as to satisfy investors that such investments in railroad securities would be safe and productive.

At the present time, because of the disappearing net earnings of the railroads generally, money for improvements cannot be borrowed except at rates considerably above the rate permitted by the Transportation Act to be earned on the value of the improvement.

Therefore, it would seem that the need of the immediate situation requires a reduction in operating costs, and that fuel and labor, which absorb 80 per cent of the total operating costs, should bear the larger portion of the reduction. Fuel and other supplies already are coming down and the United States Railroad Labor Board has announced that in the near future it will order an adjustment of wages downward. These two features of the situation are encouraging and with the return of the normal volume of traffic of the country the financial condition of the railroads should be materially improved, depending largely upon the extent of reduction made by the Labor Board in the war-time wages of railroad employees.

Freight Rates

Much has been said about reducing freight rates recently and the prevailing impression seems to be that they are generally too high, but when it is considered that the average gross earnings of the railroads of the United States as a whole for hauling a ton of freight one mile since September, 1920, when the last raise in freight rates took effect, has been only 1.217 cents per ton per mile, it will be seen that freight transportation probably is the cheapest commodity in the country, notwithstanding the large shrinkage which has taken place in other commodities. But the vast volume of traffic, the large units in which it is carried and the immense distances it is transported in this great country have caused many of our citizens to lose sight of the astonishingly low price which the railroads receive for their freight service when reduced to the unit of moving a ton of freight one mile instead of the usual figures of billions of ton miles and millions of dollars.

Since the earnings of the railroads of the country on the present rate basis are inadequate to meet their requirements it is obvious that no general reduction in rates can be considered until the cost of operation can be reduced sufficiently to assure the railroads at least the net return authorized by the Transportation Act.

Mr. Byram said that of 100,000 cars bought by the Railroad Administration the Chicago, Milwaukee & St. Paul took 4,000, agreeing to pay a maximum of $3,050 apiece, but under the sliding scale contract under which the cars were purchased it looks as though they were going to cost between $2,700 and $2,800 apiece. In reply to a question as to the price at the present time, Mr. Byram said there are no accurate figures because nobody is buying any cars now, but he should think it ought to be possible to buy these cars at somewhere around $2,000 apiece now.

Mr. Byram said that his road has not been earning operating expenses and taxes since the first of January and is about $4,000,000 behind, while the volume of business is about 50 per cent less than that of a year ago. A large part of this, he said, is due to the cessation of the buying of lumber and partly because the copper activities are almost at a standstill. Senator Kellogg asked whether the building of the western extension was an advantage or a disadvantage. Mr. Byram said he thought it had been an advantage and that it has not been any disadvantage at least. One of the first things he did when he came to the property in 1917 was to take up that question, and it seemed to him the general impression is wrong. For the year 1917, he said, the western extension was producing 25 per cent of the gross earnings and 40 per cent of the net earnings. Mr. Byram said that arrangements had been made for taking care of the immediate future as to interest and taxes, but, of course, it would be necessary to have more net revenues before long. Asked whether a decrease in wages of 15 to 20 per cent would place his road on an earning basis, Mr. Byram said the wage award of last year added to the expenses of his road approximately $20,000,000 a year, whereas the interest on the bonds is about $17,000,000. If the wage decrease is less than 15 per cent, he said, it will be a little more than half enough, although the actual result would depend on the rates and the volume of business.

Urges Prompt Payment of Federal Control Accounts

Statement by Samuel Rea, President, Pennsylvania Railroad

The government could materially assist the railroads in their present difficult situation, Samuel Rea, president of the Pennsylvania Railroad, told the Senate committee, by completing at once payments still due the roads from the federal control period. If this were done and the roads were allowed to issue 15 year obligations for the amounts spent by the government for permanent improvements, as would have been done if the roads had themselves spent the money, their present position would be greatly improved, Mr. Rea said. An abstract of his statement follows:

I feel that this inquiry would not be complete without drawing your attention to some important questions which directly affect the present condition of the railroads and their immediate outlook. Your committee very properly examined the results of recent years, for it is clear that if the net returns of the carriers had been ample during the past decade they would now be able to go through the existing depression without serious detriment to their own credit and to the country.

The returns earned from operations for the years 1918 to 1920 cannot be taken as indicative, for the reason that the traffic rates were not adjusted to meet the current costs. In those years the railroad companies had the benefit of the rental under the federal control contract, and the guaranty under the transportation act, provided they realize, such rental and guaranty by actual payment. So far there are serious unsettled questions as to actual settlements for both periods. Unless a fair interpretation is given to the federal control and transportation acts, and the federal control contract, and of the conditions under which the railroads were taken over by the President, the amounts of federal control and guaranty period compensation will prove theories and not actualities, because they will not be paid to the railroads, and the cost either in whole or in part of restoring the properties and the disorganized organizations will be placed on the corporations, which would be an injustice and would endanger their financial condition.

Present General Condition of the Railroads

In many particulars the present position of the railroad companies and their lack of traffic, is due to world-wide conditions, which prevail also in the other industries as well as in the railroad business. But the difference between these industries and the railroads in meeting those conditions is that the industries had the advantage of sharing in the high prices and profits of the war period, and at present the industries have the power to fix their prices and wages, and to shut down their plant if the business, or profits, do not warrant their operation. The railroads, however, were in the war period restricted to the return of the test period, and even under the transportation act are not allowed to retain the profits made under reasonable rates if in excess of 6 per cent. Although the railroads were granted higher rates effective August 20, 1920, yet since that date they have proven to be insufficient to cover their costs, and yield a fair return. Though many railroads are facing financial difficulties, they cannot promptly reduce wages nor change the wasteful working conditions, to the level of the going wages and working conditions of the industries, through the territory they serve. That must be done by the Labor Board. By federal law the rates were to be fixed to produce a fair return, yet the railroads are apparently unable to insist upon compliance with that law so long as supply and demand restrict production and consumption, and reduce the volume of traffic.

The railroads, therefore, must get the requisite financial results to allow them to exist, by postponing all capital expenditures, by curtailing employment, by shutting down all possible activities on the road and in the shops and offices, by stopping the purchase and use of supplies, by postponing for the present, even though they will cost more later, all maintenance or replacement expenditures except those requisite for safety.

The return earned by all the railroads of the country for the six months ended February 28, 1921, was only at the rate of about 2½ per cent. per annum, on the value of the property devoted to public use, against a mandatory minimum return of 5½ per cent., but the transportation act alone can scarcely be blamed for the deficiencies of return which reflect a world-wide business depression—for one-half of this period very severe. It will be found by experience that, compared with war conditions, when we supplied all the world, our production is materially in excess of average consumption, so that production, price and consumption all need adjustment, and the railroads are bearing part of the costly loss of traffic incidental to these conditions.

The railroads are not earning fixed charges and fully maintaining their properties. They are short of working capital and are still in a business depression—one of the worst in their experience. While we hope that the bottom has been reached, I would point out that there can be no resumption of railroad prosperity until there has been an increase in the movement of coal, coke, iron, steel and other building construction materials and heavy products. The mines, industries and farms of the country must rise and fall together; one cannot be made prosperous or continue prosperous at the expense of another. Manifestly in view of these conditions as to operating expenses, and the necessity to pay taxes, fixed charges and sustain the credit of the railroads, it became an imperative necessity to reduce labor costs and enforce the serious retrenchments to which I have referred.

Therefore, the real railroad problem at present is to put the carriers in a position to meet their obligations, and support their investment during the period of depression. To save many of them from bankruptcy, a prompt and adequate reduction of wages is essential, as well as the abolition of the wasteful national agreements, and the substitution therefor of agreements with the employees that will promote greater efficiency and provide reasonable working conditions, so that the wages and working conditions will correspond generally to present conditions. It is not a question of any controversy with employees or labor unions, and it originates from no desire to see that railroad men are not paid adequate wages, because that would be hurtful to the railroad business and cause the better men to go into other industries, but it is clearly a condition where the dollars earned are not sufficient to pay the wages, maintain the property, and also enable the companies to meet their obligations.

The property investment return for the calendar year 1916 enabled the railroads to exist and meet their obligations. It showed a return of 6.17 per cent. and a large volume of traffic was carried with great efficiency and economy. In that year out of every dollar of revenue earned 40.8 cents were paid to labor, but in 1920 59.9 cents out of every dollar were so paid. In 1916, after paying for materials, taxes and rents for equipment and joint facilities, 28.9 cents were left out of every dollar earned to pay fixed charges and a return upon the investment, but in 1920 only one cent was left. Therefore the fixed compensation for the first eight months of the year saved most of the roads from bankruptcy. Taking the last quarter of 1920, when rates as well as wages had been adjusted, it required 55.1 cents out of every dollar of revenue to meet the payrolls. The total payroll compensation rose from $1,468,576,000 in 1916 to $3,698,-216,000 in 1920.

General Rate Reductions Impossible

Under the conditions outlined it is clear that no horizontal or general reduction in rates can be granted, until such time as the net railway operating income of the railroads shows a very substantial improvement over the results now obtaining, which are at present insufficient to meet their fixed charges and usual dividends, and also until the railroads have restored any inadequacy of maintenance. Further, until the foregoing economies are effected, a general rate reduction would not be in the public interest, as it would force the railroads to produce and sell transportation for less than cost, and it is extremely doubtful if it would stimulate production, or increase purchases, of goods by the public. In addition, so long as the railroads cannot earn a fair return, and are much below the 5½ per cent return, and have no cash surplus from the previous years, there must be a deficiency in transportation facilities, equipment and service, and the cost of that deficiency to the public is much greater than the continuation of transportation rates that give some fair measure of profits. Under such conditions it is evident that no steps should be left untaken which will strengthen the financial position of the railroads, as it is evident that while rates should not be reduced, it is equally evident that they cannot be increased under existing conditions.

Funding of Capital Expenditures During Federal Control

There has never been a doubt in my mind of the intention of Congress to authorize prompt and fair compensation settlements with the railroads for the federal control period, and for the guaranty period. The government assumed the possession, use and control of the railroads, and used them as if it owned them, during the war period. It also made large capital expenditures thereon, amounting to about $1,200,000,000. These expenditures must be assumed and paid by the railroads with interest. Almost $400,000,000 was for equipment, and was funded through the national equipment trusts, which require the railroads to pay back to the government these capital expenditures for equipment during a period of 15 years. This left about $800,000,000 of capital expenditures, chiefly for road and facilities, to be funded by the carriers. Under the terms of the transportation act discretion was conferred upon the President to fund all these expenditures, but the right was conferred upon him with certain limitations to offset against such expenditures, amounts due by the Railroad Administration to the carriers on other accounts for the federal control period, and this right will, by an understanding with individual carriers and under the terms of the act, be exercised by the administration. However, under the different conditions that now exist, these arrangements should be altered if the carriers cannot meet them, as it is impossible for the railroads to sell securities and pay off all these capital expenditures at present, and they have a shortage of working capital and practically no surplus earnings.

In view of the present situation of the railroad companies, and having regard to the emergency which now exists, I suggest that the President should, in the public interest, exercise his discretion so as to permit the funding of the entire expenditures of the character referred to which were made during the period of the federal control. Expenditures for additions and betterments are capital expenditures and should not consequently be

taken care of even in part by the application thereto of current funds, or by withholding any part of the amounts due to the carriers for the federal control period. The railroads themselves would have been obligated to raise the capital in advance of making such addition and betterment expenditures, or else the work would not have been done, and the government—without loss to itself and receiving a good interest return—should be willing to fund these expenditures, instead of withholding the cash that the railroads need badly to meet current requirements, and help them to surmount this difficult period. I, therefore, respectfully suggest, unless the President will so exercise that discretion, your consideration of an amendment of the transportation act which will direct the funding of all expenditures for additions and betterments made during the period of federal control.

Federal Control Act and Contract Differences Should Be Decided

I also suggest, as further relief, an amendment which will assure the observance of the recommendations made by the President at the time he took the railroads over, viz., that the railway properties will be maintained during the period of federal control in as good repair and as complete equipment as when taken over by the government, and further that investors in railway securities might rest assured that their rights and interests would be scrupulously looked after by the government as they could be by the directors of the several railway systems, which in effect means a full observance of the similar provisions of the federal control act. The seriousness of that situation is indicated in the recent statement by the director general, as of May 1, 1921, of the condition of the Railroad Administration in the matter of liquidating questions in dispute arising out of, or incident to, federal control.

The attitude of the director general is not complained of, and he aptly describes the matter when he says: "This adjustment and straightening out of this wonderful adventure on the part of the government presents for solution novel, complex and important questions wholly without precedent." But we may well ask what is to be the financial condition of the railroads while final conclusions are being reached.

The committee may recall, in this connection, the extensive negotiations over the standard contract, and the differences of opinion which have since arisen, to which the director general refers in his statement, as to the meaning to be placed upon the words "cost of labor" in the maintenance provisions of this contract. The railroads believe that it can be shown that the same amount of physical reparation was not produced by the dollars expended in the federal control period as in the test period, and therefore the pledge of the President and of Congress had not been made good. The Railroad Administration, however, holds the view, if I correctly understand their position, that the test of the performance of the pledge is the number of dollars spent for labor, taken in conjunction, of course, with the material applied, in the two periods for maintenance purposes. The carriers contend that the "cost of labor" is the cost to do the same amount of physical maintenance or reparation in the federal control period as compared with the cost to do the same work in the test period.

It cannot be too strongly pointed out that the view of the director general results in theoretical maintenance only—that is, in materials not applied to or in place on the property—while both the President and the act of Congress promised and required that the property should be actually and not theoretically maintained.

If, however, the contract can be said to justify the view of the Railroad Administration, notwithstanding it specifically requires that the cost of labor must be dealt with, and also requires physical reparation, and not merely a dollar test covering only the price of labor, then in the interest of right and justice Congress should clarify the federal control contract provisions as to maintenance, which the director general points out as the chief cause for difference of opinion between the Railroad Administration and the carriers, and which he intimates can only be finally determined by the Supreme Court. This, I feel, could, if necessary, be covered by an amendment to the transportation act to the effect that the extent of the physical reparation should be the measure of the performance of the President's pledge, but even here I am advised that no amendment is required, as the President's authority is already ample under the transportation act.

Further, I suggest this because, based on the director general's report, as to settlements, it may take about 3½ years more to review all claims, and if appeal must be made to the Supreme Court to decide the meaning of the federal control act and contract as they may apply to the different conditions and questions on each road, it may take many more years. The essence of that situation is that many of the roads will be forced to accept much less than they are entitled to, and accept the burden, hoping to work it off in succeeding years. In making this suggestion I am at the serious disadvantage of not knowing the actual condition of the claims made by the railroads, both those having federal control contracts and those not having federal control contracts; nor the physical reparation in ties, rails, ballast, stations, shops, and other structures, or in locomotive, passenger cars and freight cars, which they will claim as due to them; but the director general's figures, based on the claims already presented, state it is probable that the under-maintenance claims will run between $700,000,000, and $800,000,000. I am convinced from talks with other railroad executives that this question of under-maintenance is a live one, combined with the failure to fund all capital expenditures, and the delay in settlements to be made for the guaranty period to which I will refer, is at the root of the weakness of railroad credit because all of these questions deprive the railroads of the ready cash to meet current requirements and to place their property in efficient condition. The main point to my mind is that the situation will not be met merely by legal argument but that substantial justice should be done to the railroads through the fulfillment of the President's recommendations and the act of Congress by ensuring the return to the owners of their property and equipment in substantially as good condition as when they were taken over by the government, and as that has not been done they should be properly compensated. Unless this is done, then I want to make it clear that, for the federal control period and the guaranty period, they will not receive what was promised them by the President and Congress. I am asking for a fulfillment of the promises, and nothing more.

Settlements for the Guaranty Period

The transportation act seemed to give the broadest power to the Interstate Commerce Commission to make settlements for the guaranty period, and also to determine the expenses. Unfortunately this section of the act, in authorizing compensation to the railroads and in dealing with maintenance, made reference to the terms of the federal control contract, and leads us into practically the same difficulties of interpretation as in the federal control settlements, and that while the Railroad Administration hesitates to settle, the commission may be discouraged in using the broader powers of settlement for the guaranty period conferred on it by the transportation act. I hope I am mistaken in this view as to the guaranty period settlement. The final result means that the conditions prevailing during the guaranty period are not to be fully taken into account. In addition to the maintenance expenses, other expenses should be viewed with a full consideration of the conditions existing in the guaranty period. I have reference particularly to the extra items of cost such as the unauthorized strike of April, 1920, which affected railroad traffic for several months before the congestion eased off; the return of large numbers of cars scattered all through the country to the home railroads; and other causes of increased costs in that period which should be recognized. Despite all these conditions the public service rendered showed improvement and greater efficiency, and, while the business lasted, each month was showing a betterment of operating conditions compared with the preceding period of federal control.

Here was a transition period from war to peace designedly selected by Congress to assist the railroads in adjusting their conditions at the end of federal control, and in re-establishing their working organizations and credit on a peace basis, and yet the net result of the act, if interpreted as suggested, will not enable the railroads to secure the result intended to be realized. Instead the result will be that the railroads shall not be fully compensated for their expenses during this period, but that when they receive the guaranty for six months, as established by what I regard as a misconception of the transportation act, they must at their own cost pay a portion of the expenses of operation and maintenance during the guaranty period, because the expenses are out of line when an attempt is made to adjust such expenses with one-half of the average annual expenses of the test period. If such an interpretation is allowed to stand it will be seen that the intention of Congress would be negatived, and the benefits that it intended to confer would not be realized, and that provisions of the act by which all surplus operating earnings were to be turned over to the government for the guaranty period, and the deficits were to be paid by the government for that period, would be rendered null and void. As this is so far from the intention of those who insisted upon the passage of the transportation act, and its consequences are so widespread to the country at large and to the railroads themselves, then, if the Interstate Commerce Commission cannot so exercise the discretion given them by what I regard as the true intention of that act, the passage of an amendment which would enable the real purpose of the transportation act to be made effective seems imperatively necessary and just. It is estimated that this would repay to the railroads several hundreds of millions of money actually expended for operating

and maintenance purposes in the guaranty period, which they believe are at present not being paid because of a clear misinterpretation of the law.

In offering these various suggestions of relief to the railroads, relative to the funding of the war capital expenditures and the removal of differences of opinion that prevent prompt and fair settlements for the federal control and guaranty periods, I do not think that I have suggested anything which is not in the public interest, and which ought not to be willingly acquiesced in. If the present conditions had been anticipated I cannot doubt that Congress would have dealt even more liberally with the railroad companies than has been done in the transportation act. I would be negligent of what I conceive to be to the real interest of the country in this difficult transportation situation, and to the investors in the railroads, if I did not bring this situation, without criticism of any government officer or department but because of real force of existing conditions, to your attention.

Wage Orders Result in Inequalities

Inequalities in the treatment of railroad employees resulting from the application of the wage standardization policy of the Railroad Administration to diversified conditions of employment were described before the committee on June 1 by J. G. Walber, secretary of the Bureau of Information of the Eastern Railroads, in a review of the numerous wage orders, reclassifications and other adjustments made during the war period. Mr. Walber ascribed much of the loss of morale of railroad employees during the war period to their dissatisfaction with the disparities resulting from the wage orders.

"The reclassification of employees in the shop and telegraph service and the rigid application of the bases of pay and rules throughout the United States in disregard of the diversified conditions encountered have produced some very remarkable and in fact grotesque results," said Mr. Walber, after giving an estimate that the wage scales of approximately 73 per cent of the railroad employees were standardized during the period of federal control. "It will be apparent to this committee that even the general description of these wage orders shows that disparities were bound to result and inequalities must have been the natural consequence, with the resultant effects upon the morale of the employees, who, it can be relied upon, are familiar with what other employees receive and who may, perhaps not deliberately, reflect their dissatisfaction in the character of the service they render.

"The practical effects of the national agreements were presented to the United States Railroad Labor Board and under their Decision 119, they are to be cancelled July 1. Just what relief will result will depend upon the ability of the managements and the representatives of the employees to negotiate new agreements, and in the event of their failure to reach complete settlements, what rules the Labor Board will decide shall be adopted. The question is far from being settled. From the newspaper accounts it appears that it is generally assumed that the decision of the Labor Board will relieve the railroads of the entire expense of these rules. This is purely speculative and in the present situation I cannot see how anyone can calculate what will be saved to the railroads.

"It also appears that when Congress was considering the legislation which culminated in the transportation act it must have been aware of at least some of the conditions attaching to the standardization of railroad wages and working conditions, and that relief therefrom would result from the requirement that in fixing just and reasonable wages and working conditions the United States Railroad Labor Board must take into consideration among other relevant circumstances.

"(1) The scales of wages paid for similar kinds of work in other industries.

"(2) The relation between wages and the cost of living.

"In our opinion, Congress must have had in mind that these elements would be given the most direct and specific application permissible under the circumstances in order to fix just and reasonable wages and working conditions, as it is obvious that, with the diversified conditions in a country so large as the United States, the establishment of rigid and inflexible rules which cannot take into consideration these diversified conditions, must to a large extent fall far short of meeting the requirements of justness and reasonableness." No standardization of wages was recommended by the Railroad Wage Commission, Mr. Walber said, but dissatisfaction with the award on the part of numerous classes of employees led to reconsiderations by the Railroad Administration of various phases of the award and reclassifications of employees in numerous supplements, interpretations and addenda to the original wage order, and the Railroad Administration decided to standardize the rates for all the skilled crafts for the entire country.

Supplement No. 4 to General Order 27 was the beginning of the reclassification of employees in the mechanical department, which in addition to putting into effect the eight-hour day with time and one-half for overtime, effective August 1, 1918, also provided minute designations of the work to be performed by the respective classes and required that work which had ordinarily been performed by laborers at the laborer's rate be performed by mechanic's helpers at a higher rate.

"The uniform application of the eight-hour day to all these different classes of employees working under different conditions produced very pronounced distortions in the monthly earnings of these different classes of employees themselves and also in comparison with other classes of employees, resulting in outspoken dissatisfaction," said Mr. Walber. In the case of car inspectors, he said, it resulted in an increase of 226.5 per cent in 1918 as compared with 1916 and in the case of car repairers in an increase of 208 per cent.

Great disparities also resulted, Mr. Walber said, from the application of minimum rates to large numbers of employees who had previously received different rates in accordance with different conditions, and also from the methods used in converting former monthly rates to new hourly rates. For example, he said, six employees in telegraph and station service, each paid $75 a month, because of the difference in the number of hours and days they worked received hourly averages ranging from 20.55 cents to 35.94 cents. Under Supplement No. 13 to General Order 27, their rates were changed to an hourly basis of 51¾ cents each, which produced increases ranging from 43.99 to 151.82 per cent.

"It must also be recognized," he said, "that for the different kinds of positions covered by the supplement it had been the general practice to have different rates, and the introduction of the minimum rate, with the formulæ for conversion, practically destroyed the relations between the different kinds of positions, which naturally must have affected the morale of the service." As approximately 50 per cent of the railroad employees of the United States are on the Eastern railroads, the increases resulting from these orders, Mr. Walber said, could not be distributed with any degree of uniformity upon all the railroads and while the increase in the average annual compensation per employee in train service in the United States from 1916 to 1920 was 84.6 per cent, in the Eastern territory it was 94.23 per cent.

Mr. Walber said he was not criticizing what was done by the Railroad Administration because he realized the difficult conditions which it faced, but that it had to adopt many short cuts to accomplish results under pressure which prevented the consideration which should have been given.

NEW SLEEPING CAR LINES on trains already in service between Memphis and Asheville on the "Memphis Special"; between Nashville and Asheville (via the N. C. & St. L. to Chattanooga) between New Orleans and Asheville via Mobile; between Norfolk and Asheville on trains 3 and 4 to Danville and beyond on trains 11 and 12.

General News Department

The Chicago, Milwaukee & St. Paul is converting a number of sleeping and parlor cars into open top observation cars to be used on the company's electrically operated lines in the Rocky and Cascade Mountains.

A wage reduction of 15 per cent has been accepted by masters, mates, pilots, and engineers of railway ferries operated on Lake Michigan, Lake St. Clair and the Detroit river. Non-licensed employees agreed to a similar reduction in April.

The American Association of Traveling Passenger Agents will hold its annual meeting at Hotel Utah, Salt Lake City, on September 12, 13 and 14. The president of the association is Gordon Noble, of Philadelphia, and the secretary is H. K. McEvoy, Chicago.

Representatives of the railroads in the Southeastern district and the executives of the four brotherhoods of train service employees began a conference at Washington on May 31 to consider the request of the brotherhoods for the organization of a regional board of adjustment.

Fifty persons were injured when a freight train on the Pennsylvania crashed into an electric car on the Indianapolis & Southern at Edinburg, Ind., on the night of May 30. The accident occurred in the center of the town on the main street. The cause has not been determined.

The Chicago Chapter of the American Society for Steel Treating has elected the following officers: Chairman, H. M. Wood, Ingalls-Shepard division, Wyman Gordon Company, Harvey, Ill.; vice-chairman, T. A. Lovegren, Standard Forging Company, Indiana Harbor, Ind.; secretary-treasurer, Harry Blumberg, Illinois Steel Company.

The Mississippi Central has nearly or quite completed negotiations for trackage rights by which it will run trains through to Mobile, Ala., over the Gulf, Mobile & Northern. The eastern terminus of the Mississippi Central is at Hattiesburg, Miss., the western terminus of the Hattiesburg branch of the Gulf, Mobile & Northern, whence the distance southeast to Mobile is 96 miles.

The Traffic Club of New York, endorsing an address given before the club on May 31 by Howard Elliott, of California, has adopted resolutions urging repeal of all full-crew laws. Mr. Elliott called attention to the fact that laws of this kind are still in effect in 19 states, including New York and New Jersey; and proposed campaigns of education such as were employed in Missouri to defeat a proposed full-crew law.

Colonel John F. Stevens, president of the Interallied Technical Board, which operates the Chinese-Eastern railroad, together with about 2,700 miles of the Trans-Siberian road, sailed for China on May 28, to resume his duties. The Interallied Technical Board was formerly composed of representatives of England, France, Italy, China, Japan, Russia, Czecho-Slovakia and the United States. At the present time, however, the Italians and the Czecho-Slovaks have withdrawn, leaving the remaining nations to carry on the work.

Brooks Morgan, president of the Biscuit & Cracker Manufacturers' Association of America, in his address at the annual convention of the association in Atlantic City, N. J., on May 31, declared that railroad rates at present are stifling industry; but he added that, in spite of high rates, manufacturers must co-operate with the government authorities and with the railroads "for the elimination of hundreds of unnecessary employees and for a reduction of wages;" for all must realize that the present earnings of the railroads are not sufficient for their support.

The Missouri-Illinois Railroad on June 1 opened its entire line for business. The line of this company, which is the successor of the Illinois Southern, extends from Salem, Ill., southwest to Kellogg, on the Mississippi River, and from St. Genevieve, Mo., southwest to Bismarck, a total distance of 127 miles, with a branch from Collins, Ill., south, to Chester, 11 miles. Regular passenger trains will be run between Salem and Chester and mixed trains between St. Genevieve and Bismarck. The river is crossed by a transfer boat. Freight service will be operated, as required, from Salem to Chester and Kellogg.

Railway Returns for April

Preliminary returns for the month of April for 171 roads operating 199,929 miles, show total operating revenues of $382,409,000, an increase of 8.4 per cent over April, 1920. The operating expenses were $329,911,000, a decrease of 6.4 per cent from April, 1920, and the net operating income was $27,566,000, as compared with a deficit in April, 1920, of $21,210,000.

Protective Section—A. R. A.

The Protective Section of the American Railway Association, formerly the Railway Special Agents and Police, will hold its first annual meeting at Hotel Pennsylvania, New York City, on Thursday and Friday, July 14 and 15. Secretary J. C. Caviston, in his announcement, gives the rates not only of the Pennsylvania but of six other hotels, and suggests that members should order rooms at once by wire, telegraphing directly to the hotel. The subjects to be considered at the meeting will be announced later.

Proposed Changes in Car Service Rules

J. E. Fairbanks, general secretary of the American Railway Association, has issued circular No. 2161 calling for a letter ballot, ordered by the board of directors and to be canvassed on June 23, on proposed changes in car service rules numbers 1, 2, 3, 4 and 5. The proposed changes provide for improved practice in the return of empty cars to owners and for a more favorable operation with respect to empty car mileage (rule 3, paragraphs d and e). It is proposed that a road unable to dispose of empty cars belonging to indirect connections by loading them to or in the direction of home, may return them to the road from which they were received, on the basis of record rights.

Proposed Revision of Per Diem Rules

The board of directors of the American Railway Association, through a circular issued by General Secretary J. E. Fairbanks, and endorsing a resolution of the transportation division, has called for a letter ballot, to be canvassed on June 20, proposing amendments to per diem rules numbers 1, 11, 13, 14 and 15. The proposed changes aim to provide more economical accounting; to avoid opportunity for dispute in settlements of per diem, and to secure prompt action in the case of cars detained because of railroad errors. A progressive penalty would be provided to lessen the number of delays in reporting; and rule 15 would prescribe the punishment for a road failing to receive promptly its own empty cars.

Electrical Hazards and Their Safeguards

Protective devices for electrical apparatus used on the New York Central Railroad entering New York City were described by H. S. Balliet, signal engineer, New York Central, in a paper presented before the American Society of Safety Engineers in New York on May 27. Mr. Balliet, with the use of lantern slides, showed how many safety devices were used in the reconstruction of the New York terminal district when it was

electrified, and described methods and apparatus which expedite the movement of traffic into the Grand Central Terminal and make for safe operation. He pointed out the need for screens and fences as a protection around such devices as transformers and bridges and stated that all high-tension poles should be stenciled to warn against the danger of anyone climbing them. He advocated protection to workmen on all electrical circuits of 220 volts or over, and said that the "safety first" slogan is probably the greatest of safeguards.

Overcharge Claims on the Nashville, Chattanooga & St. Louis

The Nashville, Chattanooga & St. Louis, in a statement covering the handling and settlement of overcharge claims for the month of April, 1921, presents following table:

	Unpaid	Paid	Total
(1) Number of overcharge claims on hand at beginning of month	313	383	696
(2) Number of overcharge claims presented by claimants during month	916	...	1,479
(2)a Number of claims charged in by connection	...	473	
(2)b Number of claims paid in suspense	...	90	
(3) Number of claims on hand at end of month	360	428	788
(4) Number of claims unpaid which were 90 days old (included in item 3)	16	...	16

From the above table it will be seen that the month closed with only 360 claims on hand unpaid. Further, there were only 16 claims on hand unpaid which had been in the possession of the road more than 90 days and these claims involved track scale weights, demurrage, storage, etc., making it necessary for the road to refer the papers to outside bureaus for information which was required before the payment of the claims could be arranged.

Merchants' Association Discusses Port of New York

Various plans and ideas relative to the development of the port of New York were discussed recently at a luncheon given by the Merchants' Association of New York at the Hotel Astor on May 27. The talks were not confined to the plans submitted by the commission representing the two states of New York and New Jersey, but dealt also with the problems of the vehicular tunnel and the advocated bridge across the Hudson river. E. H. Outerbridge, chairman of the Port Authority, stated that it was the belief of the Port Authority that remedial results could be obtained more quickly by the inauguration of some system, such as voluntary store door delivery, the consolidation of marine services and equipment and the establishment of inland terminals in Manhattan. In equipping itself to carry on its work, the Port Authority has retained the engineering staff which served the joint commission, and, in addition, has secured the services of Major E. C. Church, transportation engineer on General Pershing's staff in France. A technical advisory board has been created consisting of Francis L. Stuart, consulting engineer, New York, and formerly vice-president and chief engineer of the Baltimore & Ohio; Morris Sherrard, consulting engineer, Newark, N. J., and Nelson P. Lewis, consulting engineer, New York.

J. J. Mantell, regional manager, Erie Railroad, described the shortcomings of the port and suggested, as a big step forward in the solution of its problems, the use of tractors and trailers to deliver freight from the New Jersey yards. General George R Dyer explained some of the reasons for the hold-up in the work of the vehicular tunnel, while George A. Post discussed the needs for a large bridge at about Fifty-ninth street. The bridge would be double deck and would have about 16 lines of highway traffic on the upper and about 10 standard railway tracks on the lower deck.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa. Next meeting, July 12, Chicago.

AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 29 S. La Salle St., E. I. R. R., 332 South Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, November 21 and 22, Pinehurst, N. C.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 24-26, 1921, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Next convention, October 3, Atlantic City. Exhibits this year will be omitted.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill. Next convention September 12-14, Hotel Sherman, Chicago.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, General Secretary, 75 Church St., New York, N. Y. Next regular meeting, November 16, 1921.

Division I—Operating.

Freight Station Section (including former activities of American Association of Freight Agents). R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section. J. C. Caviston, 75 Church Street, New York. Annual meeting, June 3 and 4, Hotel Westminster, Boston.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association), J. C. Caviston, 75 Church St., New York, N. Y.

Telegraph and Telephone Section (including former activities of the Association of Railway Telegraph Superintendents). W. A. Fairbanks, 75 Church St., New York, N. Y.

Division II—Transportation (including former activities of the Association of Transportation and Car Accounting Officers). G. W. Covert, 431 South Dearborn St., Chicago, Ill.

Division III—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill.

Construction and Maintenance Section. E. H. Fritch.

Electrical Section. E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association). F. W. Pfleging (Chairman); H. S. Balliet, 75 Church St., New York, N. Y. Annual meeting, June 6-8, Hotel Drake, Chicago.

Division V—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association), V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Meeting, June 15 and 16, Hotel Drake, Chicago.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association), V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill.

Division VI—Purchases and Stores (including former activities of the Railway Storekeepers' Association), J. P. Murphy, General Storekeeper, New York Central, Collinwood, Ohio. Second annual meeting, June 9-11, Hotel Blackstone, Chicago.

Division VII—Freight Claims (including former activities of the Freight Claim Association), Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 819 Waller Ave., Austin Station, Chicago. Next convention, October 18-20, 1921, New York City. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—J. F. Jackson, Central of Georgia, Savannah, Ga. Next meeting, November, 1921, Chicago.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division 5.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Next convention, August 9-11, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eiseman, 4600 Prospect Ave., Cleveland, Ohio. Next convention, September 19-24, Indianapolis, Ind.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 20-24, New Monterey Hotel, Asbury Park, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—E. M. Chandler (acting secretary), 33 W. 39th St., New York. Regular meetings, 1st and 3d Wednesdays in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—George M. Hunt, Chemist, Forest Products Laboratory, Madison, Wis.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, Northern Pacific R. R., St. Paul, Minn. Next annual meeting, May 19, 1922, Montreal.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Next convention, October 18-21, Hotel La Salle, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—A. W. Clokey, 1658 McCormick Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division 1.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division 2.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, Paul Dickinson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—Thomas B. Koeneke, St. Louis, Mo. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. P. Elliott, Terminal Railroad Association of St. Louis, East St. Louis, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—D. B. Wright, 34th St. and Artesian Ave., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILWAY CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division 7.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, August 16-18, 1921, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn. Next convention, September 12-15, Hotel Sherman, Chicago. Exhibit by Association of Railway Supply Men.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention, October 4-6, 1921, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—(See A. R. A., Division 5.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division 5.)

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Peoples Gas Bldg., Chicago. Meeting with American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, at 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Next annual meeting, June 8, 1921, Hotel Traymore, Atlantic City, N. J.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—R. J. Himmelright, 17 East 42nd St., New York. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division 4, Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division 6.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Exhibit at June convention of American Railway Association, has been cancelled.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City. Meeting with American Railway Association, Signal Section.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, 935 Peoples' Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 117 East 98th St., Cleveland, Ohio. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 14 E. Jackson Boulevard, Chicago. Meeting third Monday each month except June, July and August.

Traffic News

Production of soft coal dropped back slightly during the week ended May 21, according to the weekly bulletin of the Geological Survey. The total output is estimated at 7,957,000 net tons, a decrease of 46,000 tons when compared with the preceding week. Preliminary reports of the loading on the following Monday and Tuesday indicate a resumption of the upward trend of production. The movement of soft coal from the lower lake ports increased.

The Southern Railway announces the establishment of new sleeping car lines between Macon, Ga., and Asheville, N. C.; between Charleston, S. C., and Asheville; between New Orleans and Asheville via Mobile and between Winston-Salem, N. C., and Beaufort, N. C. These arrangements are temporary. On June 26 new night trains and additional sleeping car lines are announced for the summer season as follows: New trains between Columbia, S. C., and Asheville, with sleeping cars to and from Charleston, Wilmington and Savannah. Between Atlanta and Asheville, with sleeping cars to and from Macon. Between Chattanooga and Asheville, with sleeping cars to and from New Orleans.

Coal Production Increases

The increase in production of soft coal which has marked the past month was accelerated during the week ended May 14, according to the weekly bulletin of the Geological Survey. The output for the week is estimated at 7,937,000 net tons, an increase of 7½ per cent over the preceding week. The largest elements in the change are believed to be the increasing shipments to the lakes and to tidewater for export. In spite of the difficulties experienced in securing boats for the lake coal trade the total dumpings of bituminous coal for the season up to April 30 were greater than for any of the four years preceding. The cumulative total to the end of April was 1,289,160 tons. Complete statistics show that the carry-over from last year at the head of the lakes on April 1 was 2,053,000 net tons.

In a letter to Senator Edge, George Otis Smith, director of the Geological Survey, discusses the situation in anthracite coal, in which he says that a factor undoubtedly contributing to the reluctance of consumers to purchase is the expectation of a downward revision in freight rates. Whatever may happen to freight rates, he says, it is unlikely that any general revision of them can be made quickly, and what may be gained by a purchaser in the shape of a prospective cut in freight is likely to be more than lost in a prospective premium price for coal. The anthracite miners' wage contract runs to April 1, 1922.

A Big Shippers' Convention

Traffic representatives of manufacturing companies which distribute their products through public merchandise warehouses are to hold a convention at the William Penn Hotel, Pittsburgh, Pa., on June 16 and 17.

The convention will be held under the auspices of the Shippers' Warehousing and Distributing Association, which was organized at Chicago a year ago for the general purpose of effecting standardization and simplification of forms, documents, practices, rules and regulations in the business relationship between the manufacturers and the public warehouse industry. Uniformity, overages and shortages, taxation on stocks in warehouses, methods of billing and systems of reporting of stocks are among the subjects which will be discussed. Details regarding the convention may be obtained from the secretary, Kent B. Stiles, 239 West Thirty-ninth street, New York. Members of the association include the American Sugar Refining Company, Chicago; Bon Ami Company, New York; Furniture Manufacturers' Association, Grand Rapids, Mich.; Jiffy Dessert Company, Waukesha, Wis.; Kellogg Toasted Corn Flake Company, Battle Creek, Mich.; Procter & Gamble Distributing Company, Cincinnati, Ohio, and the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

Improved Express Service

Robert E. M. Cowie, vice-president of the American Railway Express Company, New York city, speaking at a recent meeting of the Traffic Group of the National Retail Dry Goods Association, said that express service had been brought up to an efficiency equal to the conditions prevailing before the war. The express company is ready to stand or fall on its future service. It has taken a longer time to get into the normal stride than had been anticipated. President Harding is said to hold that the cost of transportation must come down, believing, apparently, as many others do, that high transportation rates have put a stop to the free interchange of business. "I hope he is right," said Mr. Cowie, "but I am doubtful enough to say that I do not think he is. The express company has dismissed lazy and incompetent men and since September we have had a campaign of improvement. By this the American Express has reduced its operating cost, without reducing wages, by something over $35,000,000 a year. Our labor problem was a much more difficult one than that of the railroads because our service extends from one end of the United States to the other. We have 38,000 offices and ship 1,200,000 packages a day. New York turns out about one-fifteenth of the lighter merchandise shipped in the whole United States. To move that light merchandise requires twenty-four special express trains leaving every night.

"Fifth-morning delivery in San Francisco is now a regular thing. The best possible time from New York is the morning of the fourth day, when everything works with clocklike procedure, but hair-trigger connections are not aimed at, so delivery on the fifth morning was decided upon.

"In the matter of claims the company is nearer up to date than it has ever been. But just because we are so improved in this respect is no reason for sending us claims without merit. There is one concern that sends us claims for everything, whether there is any merit in them or not. We have turned down over 500 claims a month of this one concern. Our office boy could tell that 500 of the 550 claims entered should not have been made. Now, of course, we are easy and try to keep a smile all the while, but we do not want that kind of claims. . . ."

Proposed Bills in Congress

Bills have been introduced in Congress by Senator New and Representative Burdick to make unlawful the present surcharge collected by railroads from Pullman passengers under the last increase in passenger fares.

The Senate Committee on Interstate Commerce has favorably reported to the Senate, with some modifications, the bill introduced by Senator Fletcher, of Florida, to amend Section 206-c of the transportation act, relative to complaints praying for reparation on account of damage claimed to have been caused by reason of the collection of unreasonable or otherwise unlawful rates during the period of federal control. The bill provides that such claims may be filed with the Interstate Commerce Commission within two years after the termination of federal control, or against the agent designated by the President for such purpose, who is the director general of railroads. The Railroad Administration had issued a ruling that such complaints should be filed by March 1 this year, but later extended the time to September 1. The bill as amended, however, applies only to claims for overcharges above the legal tariff charge. The report, by Senator Kellogg, says the bill was referred to the legislative committee of the Interstate Commerce Commission, which recommended the passage of the bill with the amendments adopted by the committee. Chairman Clark, of the commission, in a letter, said that the commission feels there is warrant for extending the period of limitation for an additional year as to overcharge claims, but that such extension should not be made as to other claims of different character.

A bill has been introduced in the House of Representatives by Representative Connally, of Texas, to repeal Section 15-a of the Interstate Commerce Act as amended by Section 422 of the Transportation Act. This is the section that provides the 5½ per cent rule of rate-making. Representative Sweet, of Iowa, has also announced his intention of introducing a similar bill, on the ground that "it is impossible for prosperity to return under the present railroad freight rates" and that the relief desired cannot be had until Section 15-a is repealed.

Commission and Court News

Interstate Commerce Commission

The commission has suspended from June 1 and later dates to September 29, the operation of certain schedules which propose to increase rates on lumber and other commodities between El Paso, Texas, and points in Oregon, Washington, Utah and Idaho.

The commission has further suspended until July 25 the operation of schedules published in W. K. Kelly's and F. A. Leland's tariffs, which provide increased commodity rates on iron or steel bolts, l. c. l., from Kansas City, Mo., to Galveston and Beaumont, Tex.

The commission has further suspended until July 20 the operation of certain schedules shown in E. B. Boyd's tariff, which provide increased rates on pig iron from points in Alabama, Georgia, Kentucky, Louisiana, Tennessee and Virginia to Ogden and Salt Lake City.

The commission has further suspended until July 29 the operation of items, shown in a Kansas City Southern tariff, proposing the cancellation by the Texarkana & Fort Smith of the rule providing for the switching of lumber to and from the track of the Texas & New Orleans at Port Arthur.

The commission has issued a decision in which it finds that the proposal of the Pennsylvania and the Baltimore & Ohio to discontinue the interchangeable use of their 60-trip commutation tickets between Baltimore and Washington, which practice was introduced during the period of federal control, is justified, and the order of suspension is vacated.

The commission in its decision in the case of the Northern Potato Traffic Association was against the railroads, and the director general finds that the relationship of rates on potatoes in carloads from points in Minnesota and Wisconsin to destinations in trunk line territory are unduly prejudicial, and the rates to northeast Texas points from the same territory are found unreasonable. The commission prescribes new maximum rates. The commission also finds that the assessment of a rental charge of $5 a car during the winter, in addition to the freight rate, is not unreasonable.

The Interstate Commerce Commission has ordered a proceeding of investigation involving the failure of the Oklahoma Corporation Commission to allow the railroads of the state to apply increases in intrastate rates corresponding to those allowed by the federal commission for interstate traffic. A petition had been filed with the commission on behalf of the railroads averring that the state commission by orders on September 4, March 9 and April 11 had ordered them to establish rates within the state which are less in many instances than those which are permitted to be established by the federal commission for interstate traffic.

Regulations for Transportation of Explosives, Etc.

Because of altered conditions certain modifications in the regulations for the transportation of explosives, inflammables and other dangerous articles by freight and express are desirable, and the commission has ordered a hearing on June 22 at Washington, before Examiner F. E. Brown, to consider suggested amendments which have been proposed by the Bureau of Explosives, after conferences with shippers and carriers, and "attendance upon the hearing does not seem important except for the purpose of presenting objections."

Under the provisions of the act of March 4, 1921, the commission is authorized to avail itself of the services of the Bureau of Explosives; and the bureau has arranged to hold conferences with interested shippers and others on the two days preceding the hearing, June 20 and 21 at Washington; and at these conferences an opportunity will be afforded all parties interested to discuss, and if possible agree upon, the amendments proposed in the regulations.

Personnel of Commissions

W. R. Williams, secretary of the California State Railroad Commission, has been appointed examiner for the commission and executive of its Los Angeles office, and has been succeeded as secretary by H. G. Mathewson, assistant secretary, effective June 1.

United States Supreme Court

Texas state authorities have filed a motion in the United States Supreme Court asking permission to file an original bill attaching the Interstate Commerce Commission's order advancing intrastate rates in Texas on the ground of the unconstitutionality of the transportation act.

Federal Employers' Liability Act

The Supreme Court of the United States last week handed down a decision under the Federal Employers' Liability Act which it regards as important beyond the interest of the parties to it because it formulates a test by which future cases may be assigned to intrastate or interstate commerce.

An award had been made by the Pennsylvania Workmen's Compensation Board for the death of a flagman at a highway crossing, which was affirmed by the state courts. The flagman was employed to signal both intrastate and interstate trains, without distinction between them or character of service, and in the course of his employment he was killed by a train whose character is not disclosed.

The Supreme Court holds that the case falls within Pedersen v. D. L. & W., 229 U. S. 146, where the court said: "True, a track or bridge may be used in both interstate and intrastate commerce, but when it is used in intrastate it is none the less an instrumentality of the former; nor does its double use prevent the employment of those who are engaged in its repair being employed in interstate commerce."

"The service of a flagman concerns the safety of both commerces and to separate his duties by moments of time or particular incidents of its exertion would be to destroy its unity and commit it to confusing controversies.

"And besides, Di Donato's duty had other purposes than the prevention of a disaster to a particular train. It had purpose as well to the condition of the tracks and their preservation from disorder and obstructions. This service and the other service cannot be separated; and behind them are the respective powers that may have ordained them."

Deducing from the duty of Di Donato that his employment was in interstate commerce, the judgment of the state Supreme Court was reversed, Mr. Justice Clarke dissenting. Philadelphia & Reading v. Di Donato. Decided May 16, 1921. Opinion by Mr. Justice McKenna.

Another case, also from the Pennsylvania court, was decided in the same way as being within the rule of the above case. Here one of the crew of a freight train was caught between two cars, sustaining injuries from which he died. Some of the cars of the train were in interstate commerce. The referee did not find definitely as a fact that the deceased was engaged in intrastate commerce at the time of his injury, but assumed that the fact might be so, and therefore regarded it as so, because in his opinion the burden of proving the contrary, that is, that the deceased "was actually engaged in work incident to interstate commerce," was upon the company, and the company had "not met the burden required of it"; and further that the company "offered no testimony whatever to show what work John M. Polk was performing at the time he was injured."

The Supreme Court holds that here, as in the Di Donato case, "the employment concerned both kinds of commerces and was to be exercised as much on one as on the other.

"Besides, we cannot concede to the view that there is a presumption that duties performed on a train constituted of interstate and intrastate commerce were performed in the latter commerce. The presumption, indeed, might be the other way." Judgment affirming the award reversed, Mr. Justice Clarke dissenting.—Philadelphia & Reading v. Polk. Decided May 16, 1921. Opinion by Mr. Justice McKenna.

Foreign Railway News

Electrification in Philippines

The Manila Railroad Company is planning the electrification of its lines, according to information made public by the Philippine Government Commercial Agency. The power is to be developed from the Agno river in Central Luzon and a thorough topographical survey of the power site is being made under the direction of the company.

Pilfering Source of Great Loss to French Roads

Pilfering on French railways cost the companies approximately $48,200,000 in 1920, or more than 14 times the 1913 figure, which was approximately $3,400,000, according to a Paris dispatch to the New York Times. It was pointed out that increased costs of stolen property caused some of the increase, but that it was largely due to the increase in theft which has been great on all roads with the exception of the State Railway.

British Railway Employees Agree to Handle Coal

Henceforth the employees of the British railways will handle all coal offered for shipment, according to press dispatches from London. Since the beginning of the miners' strike until the present union railway employees had refused to handle "blackleg" coal produced by strike breakers and, in some instances, coal imported from abroad. This refusal resulted in the suspension of a number of employees and threatened to cause trouble between the railway unions and the managements of the carriers. It was stated that the decision of the railway unions to resume the handling of coal was based on the fact that their refusal did not help the miners and not because of any lack of sympathy with the aspirations of the miners' union.

Rolling Stock Situation in Poland

LONDON.

It is reported that Poland has only 50 per cent of the railway rolling stock that would be necessary to put the railways in normal condition, but that the situation will improve as soon as it receives the 480 locomotives and 12,900 cars, assigned to it by the Reparations Committee. In order to encourage the development of national industry the Polish government has ordered locomotives and cars from Polish manufacturers to be delivered within ten years. These manufacturers it is certain will require foreign capital to enable them to supply the required rolling stock. For the first deliveries the manufacturers have been authorized to purchase abroad various parts such as wheels, axles, and similar material, but they must produce these parts in Poland as soon as possible. A commission of Government officials, it is stated, has left for Italy in order to approach Italian capitalists with regard to their participation in this enterprise.

Britain Scores in Chilean Competition

English financiers are reported to have arranged for a loan of upwards of $15,000,000 for the construction of a short line railway from Valparaiso to Santiago, Chile, through Casablanca, according to correspondence of the Times (London) Trade Supplement. The bankers stipulate, according to the report, that the line must be constructed by a British firm. It is pointed out that the English financiers were able to offer lower interest rates and were satisfied with less security than American houses which were interested in the project. The new line, it is said, will shorten the distance between the two cities and, by providing better grades, reduce the running time from the present schedule of three and one-half hours to approximately two and one-half hours. In the meantime, the government is going on with its plans to electrify the present line between these two cities and bids will be opened on June 30 for the construction of the first section of this electrification.

April Car Exports

Further declines are noted in the shipments of cars in April when compared with the March figures. The freight car shipments totaled 572, valued at $808,982, as compared with 707, valued at $1,131,447, for the previous month. Six passenger cars were exported as compared with 10 in March. The detailed figures by countries, as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Passenger Number	Passenger	Freight and other Number	Freight and other	Parts of cars
Finland	..	.....	...	.....	$36
France	..	.....	...	.....	238
Greece	..	.....	...	.....	5,590
Italy	..	.....	...	.....	1,858
Sweden	..	.....	...	.....	366
England	..	.....	...	.....	1,872
Canada	..	.....	66	$86,798	32,482
Guatemala	..	.....	...	.....	1,372
Honduras	..	.....	...	.....	40,578
Panama	..	.....	...	.....	1,225
Salvador	..	.....	...	.....	75
Mexico	3	$22,098	79	148,407	27,245
Newfoundland and Labrador	..	.....	...	.....	1,152
Jamaica	..	.....	...	.....	297
Trinidad and Tobago	..	.....	...	.....	7
Cuba	..	.....	244	274,159	122,704
Virgin Islands of U. S.	..	.....	...	.....	1,587
Dominican Republic	..	.....	...	.....	16,729
Argentina	..	.....	...	.....	221,232
Brazil	3	20,200	...	.....	299,591
Chile	..	.....	...	.....	28,563
Colombia	..	.....	...	.....	263
Ecuador	..	.....	...	.....	4,374
Peru	..	.....	43	25,220	27,740
Venezuela	..	.....	20	11,283	317
China	..	.....	...	.....	328,190
Kwantung, leased territory	..	.....	...	.....	1,906
Chosen	..	.....	...	.....	777
Dutch East Indies	..	.....	61	64,251	.....
Japan	..	.....	57	187,664	13,915
Australia	..	.....	2	11,200	41,120
New Zealand	..	.....	...	.....	.....
Philippine Islands	..	.....	...	.....	3,415
Portuguese Africa	..	.....	...	.....	880
Total	6	$42,298	572	$808,982	$1,227,696

Transportation a Major Subject at International Commerce Convention

Among the American contributions to the conferences of the International Chamber of Commerce to be held at London, England, during the week of June 27, will be a comprehensive summary of American railroad practices in making international shipments to Canada and Mexico. This report will be submitted with the hope that business men of Europe, where national boundaries clog and impede commerce, may benefit by experience on this continent. Other American contributions to these conferences will be a trial balance sheet of the world's financial condition, a survey of world communications, a review of economic conditions in the United States, reports on ocean transportation, fabricated production, distribution, raw material production and port facilities.

Delegates to the conference will be organized into five groups, each group taking up one of the five main subjects into which the program has been divided. Each of the five "foundation" countries—Great Britain, France, Italy, Belgium and the United States—has been given the chairmanship of one of these groups. The chairmanship of the transportation and communication group has been assigned to this country and Walker D. Hines, formerly Director General of Railroads, has been appointed chairman. Chairmen of the other groups are: Walter Leaf, Great Britain, for finance; Eugene Schneider, France, for production; M. Cassin, Italy, for distribution; M. Verwilghen, Belgium, for devastated regions.

Among the 200 delegates from this country will be some prominent railroad men and financiers. M. ter Muelen, of Holland, originator of the "ter Muelen plan" for credit extension, will attend the finance group sessions. Chairmen of the various American committees are: Alba B. Johnson, president, Philadelphia Chamber of Commerce, fabricated production; S. M. Felton, president, Chicago Great Western, land transportation; L. B. Stilwell, consulting engineer, New York, port facilities; W. H. Booth, vice president, Guaranty Trust Company, finance; W. E. Kugeman, vice president, American Radiator Company, distribution; E. J. Cornish, president, National Lead Company, production of raw materials; and J. J. Carty, vice president, American Telephone and Telegraph Company, communication.

Equipment and Supplies

Car Deliveries in April

The number of freight cars delivered in April by the 27 car building companies reporting to the Railway Car Manufacturers' Association totaled 4,455 for domestic service and 871 for export. The passenger train cars delivered totaled 116 for domestic service. On April 30 the companies had on hand undelivered orders for 17,513 freight and 565 passenger cars for domestic service and 3,312 freight and 24 passenger cars for export. The detailed figures for the month follow:

New Cars Delivered

	Domestic	Foreign	Total
Freight	4,455	871	....
Passenger	116	0	....

On Order and Undelivered

	Domestic	Foreign	Total
Freight	17,513	3,312	20,825
Passenger	565	24	589

Car Repairs

Delivered—April	....	3,898	....
On order and undelivered April 30	....	11,884	....

Locomotives

THE MEXICAN RAILWAY has ordered 11 consolidation type locomotives from the Baldwin Locomotive Works.

Freight Cars

THE WABASH RAILWAY is contemplating having repairs made to 500 hopper cars.

THE VIRGINIAN RAILWAY is contemplating having repairs made to a large number of freight cars.

THE FLEISCHMANN TRANSPORTATION COMPANY, Chicago, is inquiring for from 10 to 100 steel underframes for tank cars.

The GREAT NORTHERN reported in the *Railway Age* of April 8, as inquiring for 500 refrigerator cars, has ordered this equipment from the General American Car Company. These cars are to have wooden underframes.

The UNITED FRUIT COMPANY, New York, reported in the *Railway Age* of May 20, as inquiring for 50 cane cars, has ordered this equipment from the Magor Car Company. These cars are to be used on the Truxillo Railway, Honduras.

Machinery and Tools

THE NEW LONDON SHIP & ENGINE COMPANY, Groton, Conn., has ordered four 60-in. engine lathes from the Niles-Bement-Pond Company.

Miscellaneous

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock noon, June 8, for parts for electrical apparatus; 100,000 tie dating nails; 1,000 pairs of angle bars and 800 D bevel steel bars, 25/64 in. by 3 11/64 in. by 20 ft.

The ILLINOIS CENTRAL is inquiring for a 90-in. driving wheel lathe, a 48-in. by 48-in. by 30-ft. planer, two 24-in. by 14-ft. engine lathes, one 20-in. by 12-ft. lathe, one 18-in. by 10-ft. lathe, one 28-in. shaper, one 24-in. shaper, one 20-in. shaper, one universal grinder, six 18-in. wheel electric double grinders and two bolt cutters, all motor driven.

A WAGE REDUCTION of 15 per cent has been accepted by masters, mates, pilots and engineers of railway ferries operating on Lake Michigan, Lake St. Clair and through the Detroit river.

Supply Trade News

The R. W. Benson Company removed its offices on June 1, from 50 Church street, to the Liggett building, Madison avenue and Forty-second street, New York City.

The American Flexible Bolt Company removed its sales offices on June 1 from 50 Church street to the Liggett building, corner of Forty-second street and Madison avenue, New York City.

The Steel Fabricating Corporation recently completed its new works and general offices at Michigan City, Ind., and has removed its executive headquarters from Harvey, Ill., to Michigan City.

Max Grant, manager of technical railway sales of the Glidden Company, Cleveland, Ohio, has left the service of that company to become manager of the railway paint department of the Acorn Refining Company, Cleveland.

The Dressel Manufacturing Corporation, New York, has established an office in the Railway Exchange, Chicago, under the supervision of **De F. Lillis,** who for many years was connected with the motive power department.

The Combustion Engineering Corporation, 43 Broad street, New York, has removed its Philadelphia, Pa. branch office from 1112 Lincoln building to the tenth floor of the Finance building. This territory is under the management of **W. C. Strips.**

The Vacuum Oil Company, 61 Broadway, New York City, has opened new branch offices at Buffalo, N. Y., and Dallas, Texas. The Buffalo office will cover New York State west of the Hudson river and the Dallas office the states of Texas and Oklahoma.

The Master Tool Company, 20 East St. Clair avenue, Cleveland, Ohio, has been organized under the laws of Ohio to manufacture a new line of pneumatic tools, and will specialize in the reclaiming of all types and makes of same. The officers of the company are: J. Nightingale, president; Charles F. Overly, vice-president, and general manager; Wm. Eckert, secretary-treasurer. C. F. Overly is manager of sales.

Obituary

Karl G. Roebling, president of John A. Roebling's Sons Company, Trenton, N. J., died at Springlake, N. J., on May 29, while playing golf. He was born at Trenton in 1873. Mr. Roebling was graduated from Lawrenceville school and from Princeton University in the class of 1894. He went with the Roebling Company immediately after graduation and in 1918 was elected president of the company.

Alexis I. du Pont, secretary and director of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., died on May 30, at Wilmington after an illness of ten days. He was born in Wilmington in 1869, and graduated from Harvard in 1892. After graduation he took up work with the du Pont Company, and had long been associated with the other members of his family in many of the large undertakings connected with their name.

Trade Publications

WATER SOFTENING EQUIPMENT.—The Graver Corporation, Chicago, has prepared three publications on water purification equipment which are of interest to railroads, Bulletins 507 and 2C being respectively a 12-page and 2-page illustrated description of the company's continuous type, cold water softening systems for small water stations and its line of quartz sand pressure filters, while Bulletin 506 is a 24-page illustrated description of its continuous softeners for large railroad stations. The latter bulletin also gives information on the conversion of existing water tanks into softeners and demonstrates and illustrates the adaptability of this system to the conical bottom steel roadside tanks.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company which was noted in the *Railway Age* of April 29 (page 1052) as accepting bids in co-operation with the railroad Y. M. C. A. for the construction of an addition to the Y. M. C. A. building at Topeka, Kansas, to cost approximately $25,000, has awarded a contract for this work to Jerome Moss, Chicago.

CHICAGO, BURLINGTON & QUINCY.—This company is accepting bids for the remodeling of its railway mail terminal building at Omaha, Nebr.

CHICAGO UNION STATION.—This company, which was noted in the *Railway Age* of May 27 (page 1246) as having closed bids on May 26 for the completion of the filled portion of the Polk street viaduct, Chicago, and the construction of a viaduct on Van Buren street, between Canal street and the Chicago river, has awarded contracts for this work to the Underground Construction Company, Chicago.

DETROIT-TOLEDO SHORE LINE.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 70-ton steel coaling station at Dearoad, Michigan.

ILLINOIS CENTRAL.—This company, which was noted in the *Railway Age* of May 13 (page 1144) as accepting bids for the construction of the substructure for its bridge over the tracks of the Chicago, Milwaukee & St. Paul, at Genoa, Ill., to cost approximately $30,000, has awarded the contract for this work to Joseph E. Nelson & Sons, Chicago. This company has also awarded a contract for concrete culvert work in connection with the improvements to the yards at Clinton, Ill., to Bates & Rogers, Chicago, at a cost of about $25,000.

ILLINOIS CENTRAL.—This company has awarded a contract to the Joseph E. Nelson & Sons for the construction of the substructure of a new overcrossing of the Illinois Central over the Chicago, Milwaukee & St. Paul at Genoa, Ill. The work will consist of the building of two concrete abutments at an estimated cost of $40,000.

MISSOURI PACIFIC.—This road has awarded a contract to Joseph E. Nelson & Sons for the construction of pumping stations at Guion, Ark., Cotter, Comal and Myrtle, and Branson, Mo., at an estimated cost of $80,000.

NASHVILLE, TENN.—The Board of Transportation of this city has awarded a contract to Foster, Creighton & Company, Nashville, for the construction of a rail and river terminal building in that city to cost about $300,000. The structure will be a five-story reinforced concrete dock and warehouse, 140 ft. by 300 ft., and will be equipped with elevators and cranes for handling package freight.

UNION PACIFIC.—This road has awarded a contract to Joseph E. Nelson & Sons for the construction of a concrete and brick interlocking tower at Council Bluffs, Iowa.

WABASH.—This company is accepting bids for the construction of a new 100 ft. turntable with a concrete base at Tilton, Illinois.

WABASH.—This company, which was noted in the *Railway Age* of May 20, as accepting bids for the construction of a brick or stucco passenger station at Macon, Mo., with dimensions of 122 ft. by 24 ft., has awarded the contract for this work to the Unit Construction Company, St. Louis, Mo.

THE MISSISSIPPI CENTRAL has nearly or quite completed negotiations for trackage rights by which it will run trains through to Mobile, Ala., over the Gulf, Mobile & Northern. The eastern terminus of the Mississippi Central is at Hattiesburg, Miss., the western terminus of the Hattiesburg branch of the Gulf, Mobile & Northern, whence the distance southeast to Mobile is 96 miles.

Railway Financial News

ALASKA ANTHRACITE RAILROAD.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue and sell at not less than 90 per cent of par and accrued interest $1,500,000 of first mortgage 6 per cent, 20-year gold bonds, the proceeds to be used to pay for construction and equipment and to discharge bonds and other indebtedness. The company's railroad is to extend from a point on Controller Bay, Alaska, northwardly to the Bering river coal fields or branches. Twenty-two miles of the line had been constructed when work was suspended in 1917.

BALTIMORE & OHIO.—*Authorized to Assume Liability.*—This company has been authorized by the Interstate Commerce Commission to assume obligation or liability to the extent of 68.64 per cent in respect of $640,000 of equipment trust certificates issued under an equipment trust of the Seaboard Air Line. The Baltimore & Ohio desires to purchase the leasehold interest of the Seaboard Air Line in 16 Mallet locomotives purchased under this trust and to pay among other things, as rental, amounts equal to 68.64 per cent of the remaining half-yearly payments and other amounts.

BALTIMORE & OHIO.—*Asks Authority to Issue Bonds.*—This company and various subsidiaries have applied to the Interstate Commerce Commission for authority to nominally issue $1,624,000 of first and refunding 6 per cent mortgage bonds to be used as collateral.

BOSTON, CAPE COD & NEW YORK CANAL COMPANY.—*Referees Report on Compensation.*—A board of referees appointed by the Interstate Commerce Commission to report on the just compensation for the use of this property by the government during the period of federal control has reported that the period of federal control of the property extended from July 25, 1918, to March 1, 1920, but that it is unable on the evidence submitted to find and report any sum of money as the just compensation calculated on an annual basis to be paid by the United States for the use of the property. It is unable to find that the property had an actual rental value which can be determined. The board reported on the cost of certain items of deferred maintenance and the cost of dredging the approach to the channel, but did not allocate it as between current and deferred maintenance. The board also reported a sum as the cost of additions and betterments properly chargeable to capital account and as the value of personal property taken under federal control.

CHICAGO & NORTH WESTERN.—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

CHICAGO & WESTERN INDIANA.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $584,000 of consolidated 50-year gold bonds and to deliver them to the company's tenants in accordance with certain leases and the mortgage under which they are issued. The commission ordered the dismissal of part of the company's application, requesting authority covering the issue of $130,000 of such bonds on September 1, 1920, and requesting approval of the action of the officers in delivering the bonds to tenant companies.

CHICAGO, BURLINGTON & QUINCY.—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Standard return (January and February, 1920; full year 1919)	$5,560,114	$33,360,683
Operating revenues (ten months):		
Freight	110,385,624	.....
Passenger	31,445,172	.....
Total operating revenues, inc. other	$155,483,805	.....
Operating expenses (ten months):		
Maintenance of ways and structures	$28,367,933	.....
Maintenance of equipment	36,353,037	.....
Traffic	1,580,803	.....
Transportation	69,529,775	.....
General	4,557,894	284,839*
Total operating expenses	$142,017,420	$284,839
Net	$19,026,499	$33,075,844
Railway tax accruals	$7,707,713	$2,340,838†
Railway operating income and standard return	$11,230,951	$30,735,006
Total non-operating income	$19,476,039	$1,146,124
Gross income	$30,706,991	$31,881,131
Interest on funded debt	$6,816,006	$6,669,587
Total deductions from gross income	$7,782,627	$8,338,660
Net income	$22,924,364	$23,542,471
Sinking funds	$231,078	$502,255
Dividends	8,867,128	8,867,128
Income balance transferred to profit and loss	$13,826,158	$14,173,088

*Corporate. †War tax only.

The annual report of the Chicago, Burlington & Quincy will be reviewed editorially in an early issue.

CHICAGO, BURLINGTON & QUINCY.—*Dividend Increased.*—The directors on May 26 declared a dividend of 5 per cent, payable June 25 to holders of record June 20. President Hale Holden stated, after the meeting of the board, that the payment was not voted on a regular basis and that, although the question of continuing the old 8 per cent rate had been discussed, it was decided that it would be best to simply declare a 5 per cent dividend without reference to the annual rate.

The indication is, according to the Wall Street Journal, that the directors contemplate placing the Burlington stock on a 10 per cent annual basis. The Burlington's outstanding capital stock now amounts to approximately $170,000,000. A 10 per cent dividend would amount to $17,000,000, compared with former 8 per cent dividend on the $110,000,000 capital stock, previously outstanding amounting to $8,800,000. It is known that the owning lines, the Northern Facific and the Great Northern, favor an increase in the amount received from the Burlington's dividend sufficient to cover the additional interest charges on the new joint 6½ per cent bonds. A 10 per cent dividend on the Burlington's increased capital stock would cover this additional charge with a small margin to spare.

CHICAGO, ROCK ISLAND & PACIFIC.—*Authorized to Issue Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue $1,000,000 of general mortgage gold bonds to be delivered to the trustee under its first and refunding mortgage and to issue $1,000,000 of first and refunding mortgage bonds to be pledged as collateral security for its short term notes.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—A review of this company's annual report for 1920 appears on another page of this issue.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Equipment Trusts Offered.*—White, Weld & Co., New York, are offering $760,000 7 per cent equipment trust gold certificates at prices to yield from 6.50 per cent to 6.40 per cent, according to maturity. They are dated January 1, 1921, and due, $95,000 annually, January 1, 1924 to 1931, inclusive. The equipment against which these certificates are to be issued cost approximately $962,800, of which amount 20 per cent is paid in cash by the railway company. It is all new and consists of six Mikado locomotives, four switch engines and 125 stock cars.

CHICAGO UNION STATION COMPANY.—*Bonds Sold.*—Kuhn, Loeb & Co., Lee, Higginson & Co., the National City Company, the First National Bank of New York and the Illinois Trust & Savings Bank of Chicago have sold $6,000,000 first mortgage 6½ per cent bonds, due July 1, 1963, at 101 and accrued interest. The principal and interest are guaranteed jointly and severally by the Chicago, Burlington & Quincy, the Chicago, Milwaukee & St. Paul, the Pittsburgh, Cincinnati, Chicago & St. Louis Railroads, and the Pennsylvania Company.

COLORADO & SOUTHERN.—*Dividend Declared.*—This company has declared the regular dividend of 2 per cent on the first preferred stock, payable June 30, 1921, to holders of record June 18, 1921.

The dividend will be paid out of surplus income of the calendar year 1921. As has been the custom for several years past, no action was taken at this time on the second preferred. Dividends on the second preferred stock are payable only after the first preferred dividend had

been paid. If the regular semi-annual dividend on the second preferred were paid at this time, and it was found in the second half of the year that earnings were not sufficient to cover the second half year's 2 per cent dividend on the first preferred, the company would declare a dividend on the second preferred before full payment had been made on the first preferred.

CUMBERLAND & MANCHESTER.—*Loan Approved.*—The Interstate Commerce Commission has approved a loan to this company of $375,000 from the revolving fund to assist the company in meeting maturing indebtedness consisting largely of short term notes.

DENVER & RIO GRANDE.—*Transfer Date Postponed.*—The date for completing the transfer of this road, sold November 20 at a foreclosure sale to representatives of the Western Pacific, has been extended to June 30 by an order signed by Federal Judges Lewis and Sanborn. The transfer was to have been completed May 30.

DENVER & RIO GRANDE WESTERN.—*Hearing on No-Par-Value Stock.*—See El Paso & Southwestern.

EL PASO & SOUTHWESTERN.—*Hearing on No-Par-Value Stock.*—The Interstate Commerce Commission on May 26 held a hearing on the applications of the El Paso & Southwestern, the Denver & Rio Grande Western, the Western Pacific and the Fort Smith & Western for authority to issue capital stock certificates having no par value. There was no opposition at the hearing, but the commissioners asked numerous questions. Frederick Strauss, who was a member of the Railroad Securities Commission which recommended the use of stock certificates of no par value, discussed the subject from the economic standpoint without reference to the particular applications of the roads. He said that the most important principle of sound finance is that the superstructure of credit shall rest on an adequately firm base of capital, without which the stability of the financial structure is impaired by an ever-growing debt with ever-growing fixed charges. It is difficult to sell stock at less than par, and a railroad whose stock is below par finds its condition becoming worse because of the necessity for financing by increasing its debt. He also pointed out that there is no such thing as constant value; all value fluctuates with use, depending upon various factors, and the fact that a share states that $100 has been paid to the company is of historic interest only.

W. C. Osborn, representing the El Paso & Southwestern, said that his company desired to get away from any statement of the value of its stock, particularly prior to a valuation of the property by the Interstate Commerce Commission.

A. C. Dustin, representing the Fort Smith & Western, said his company is not authorized to issue anything other than no-par stock.

John J. Bowie, representing the Denver & Rio Grande Western and the Western Pacific, explained the intricacies of the reorganization of those companies, which is now being carried out, and he warned the commission against undertaking to assume the exercise of business judgment of executive committees or boards of directors in connection with railroad financing.

FORT SMITH & WESTERN.—*Hearing on No-Par-Value Stock.*—See El Paso & Southwestern.

HUNTINGTON & BROAD TOP MOUNTAIN.—*Asks Authority to Issue Car Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to issue car trust certificates to the amount of $300,000 for the purchase of four locomotives and ten passenger cars, which cost $411,393. Arrangements have been made for the sale of the certificates at 88.61 per cent of par.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Annual Report.*—The income account for the year ended December 31, 1920, compares with the previous year, as follows:

	1920	1919
Operating income	$826,246	.....
Income from lease of road	.....	$10,619,875*
U. S. Government standard return for operation of Soo Line and Wisconsin Central for January and February, 1920	1,763,163	.....
Estimated amount of guaranteed compensation for period March 1, 1920, to August 31, 1920	5,289,489	.....
Due from U. S. Government under guaranty of Sec. 209, Transportation Act of 1920, for deficit incurred in operation of road March 1, 1920, to August 31, 1920	269,815	.....
Gross income	$9,749,769	$11,469,772
Rent for leased roads (Wisconsin Central's proportion of government compensation)	$2,303,924	$3,487,435
Interest on mortgage bonds	2,913,850	2,913,921
Total deductions from gross income	$6,665,156	$7,649,994
Net income transferred to profit and loss	$3,084,613	$3,819,779
Dividends:		
Preferred stock, 7 per cent	$882,238	$882,238
Common stock, 7 per cent	1,764,476	1,764,476
Balance credit December 31	22,290,308	21,593,335
*From U. S. Government, account standard return	.....	$10,610,525
Account M., St. P. & S. Ste. M.	7,123,091	.....
Account Wisconsin Central	3,487,434	.....
From Minn. Northwestern Electric Railway Company	.....	9,350
		$10,619,875

*The annual report of the Minneapolis, St. Paul and Sault Ste. Marie will be reviewed editorially in an early issue.

MISSOURI-ILLINOIS.—*Authorized to Issue Securities.*—This company has been authorized by the Interstate Commerce Commission to issue at par, for cash and in payment for certain property, $1,500,000 of capital stock and to issue and sell at par $300,000 of first mortgage 7 per cent bonds.

READING COMPANY.—*Prosser Committee to Join in Appeal.*—Seward Prosser, president of the Bankers' Trust Company, denies that he has resigned as president of the Reading common stockholders' committee. According to Mr. Prosser, a sub-committee, representing the larger holders in the committee, has been formed, with E. P. Maynard, president of the Brooklyn Trust Company, as chairman, and Frederic F. Gunnison, vice-president of the Lawyers' Title & Trust Company, as secretary, to co-operate with the Henry Evans insurance companies in appealing from the decision of the Federal Court in Philadelphia. An initial assessment of $25,000 will be levied to defray legal expenses.

UNION PACIFIC.—*Asks Authority to Guarantee Bonds.*—This company and the Oregon-Washington Railway & Navigation Company have filed a joint application with the Interstate Commerce Commission for authority to guarantee $14,755,500 of O. W. R. & N. first and refunding mortgage 4 per cent bonds now held in the Union Pacific treasury, which are part of the purchase price to be paid by the Union Pacific to W. A. Clark for his half-interest in the Los Angeles & Salt Lake. The application also provides for a modification of the tax provision in the bonds relating to the deduction of federal income taxes.

WESTERN PACIFIC.—*Hearing on No-Par-Value Stock.*—See El Paso & Southwestern.

Closing of D. & R. G. Sale Delayed—See Denver & Rio Grande.

Guaranty Certificates Issued

The Interstate Commerce Commission has issued certificates for partial payments on account of the six-months' guaranty for 1920 to:

Chicago, Milwaukee & St. Paul	3,000,000
Grand Trunk as lessee of Atlantic & St. Lawrence	$425,000
Grand Trunk of Canada	22,000
Grand Trunk Western	1,000,000
Kanawha & Michigan	103,000
Lake Charles & Northern	21,000
Louisiana & Texas Railroad & Steamship Company	85,000
Minneapolis & St. Louis	390,000
Rutland	225,000
Southern Pacific	4,200,000

Dividends Declared

Boston & Albany.—2½ per cent, quarterly, payable June 30, to holders of record May 31.

Buffalo & Susquehanna.—Common, 1¾ per cent, quarterly; preferred, 2 per cent, semi-annually; both payable June 30, to holders of record June 15.

Chicago, Burlington & Quincy.—5 per cent, payable June 25 to holders of record June 20.

Chicago, Rock Island & Pacific,—6 per cent preferred, 3 per cent, semi-annually; 7 per cent preferred, 3½ per cent, semi-annually, both payable June 30, to holders of record June 10.

Colorado & Southern.—First preferred, 2 per cent semi-annually, payably June 30, to holders of record June 18.

Delaware, Lackawanna & Western.—1¾ per cent, quarterly, payable July 1, to holders of record June 14.

Fonda, Johnstown & Gloversville.—Preferred, 1½ per cent, quarterly, payable June 15, to holders of record June 10.

Lehigh Valley.—Common, 1¾ per cent, quarterly; preferred, 2½ per cent, quarterly; both payable July 2 to stock of record June 11.

Morris & Essex.—$1.75 semi-annually, extra, payable July 1, to holders of record June 9.

Annual Report

Sixty-first Annual Report of the Chicago and North Western Railway Company

Year Ending December 31, 1920

REPORT OF THE BOARD OF DIRECTORS

To the Stockholders of the Chicago and North Western Railway Company:

The Board of Directors submits herewith its report of the operations and affairs of the Company for the year ending December 31, 1920.

As the railway property of the Company was operated by the Director General of Railroads during the months of January and February, 1920, the results of its operation by the Company, shown in this report, cover, unless otherwise specifically stated, the ten months from March 1 to December 31, 1920, inclusive.

OPERATING REVENUES:		
Freight	$94,570,196.03	
Passenger	32,126,380.20	
Other Transportation	10,850,286.61	
Incidental	3,208,765.05	
		$140,755,627.89
OPERATING EXPENSES (92.54 per cent. of Operating Revenues		130,252,212.33
Net Revenue from Railway Operations, carried forward.		$10,503,415.56
RAILWAY TAX ACCRUALS (5.37 per cent. of Operating Revenues)	$7,557,888.55	
UNCOLLECTIBLE RAILWAY REVENUES	28,276.09	
		7,586,164.64
Railway Operating Income		$2,917,250.92
EQUIPMENT AND JOINT FACILITY RENTS—Net Debit		2,217,598.77
Net Railway Operating Income		$699,652.15
NONOPERATING INCOME:		
Accrued Compensation for lease of road to U. S. Government (January and February, 1920)	$3,802,999.80	
Account amount due from U. S. Government under Guaranty Section of Transportation Act, 1920	16,509,184.88	
Rental Income	704,477.83	
Dividend Income	1,321,243.90	
Income from Funded Securities	222,319.31	
Income from Unfunded Securities and Accounts	490,073.52	
Other Items	61,611.50	
		23,111,910.74
Gross Income		$23,811,562.89
DEDUCTIONS FROM GROSS INCOME:		
Rental Payments	$124,056.12	
Interest on Funded Debt	10,440,293.55	
Interest on Unfunded Debt	360,398.03	
Other Deductions	340,958.68	
		11,265,706.38
Net Income		$12,545,856.51
DISPOSITION OF NET INCOME:		
Sinking Funds	$86,602.56	
Dividends:		
7% on Preferred Stock	1,567,650.00	
5% on Common Stock	7,257,625.00	
		8,911,877.56
Balance Income for the Year		$3,633,978.95

GENERAL REMARKS

On March 1, 1920, the property was returned after having been in the possession and under the control of the United States Government for a period of twenty-six months.

As was stated in the last Annual Report, the Transportation Act, 1920, provides that for the period of six months beginning March 1, 1920, and ending August 31, 1920, any carrier desiring to do so could accept a guaranteed operating income equal to one-half of its annual compensation during Federal control, and you were advised that the Board of Directors accepted this guaranty.

The total amount due the Company under the guaranty provisions of the Transportation Act, 1920, cannot be definitely stated until all the transactions applying to the guaranty period have been ascertained and the allowances for maintenance and additional compensation determined. The total of $16,509,184.88, included in the income statements, as published in this report, as "Account amount due," includes only the transactions applying to the period that have been accounted for as of December 31, 1920. Information requested by the Interstate Commerce Commission to enable them to determine the amount due has been furnished as requested.

The account with the Director General of Railroads has not yet been settled. On November 23, 1920, claim was made against the United States Railroad Administration which includes an amount for undermaintenance, and for deficiency in materials and supplies turned back at the end of Federal control, as compared with the amount on hand when the property was taken over. The remainder of the claim was for unpaid compensation, balances on open accounts, accrued interest and depreciations, and for the value of property retired during the Federal control period and not replaced, less all credits due the Railroad Administration, including amounts advanced by the Director General for the construction of additions and betterments and payments for equipment.

In winding up matters arising out of and incident to Federal control, the Federal Control Act authorized the President of the United States to inspect the property and records of all systems of transportation to secure any information concerning matters arising during Federal control, and the carriers were required to provide all reasonable facilities and upon request of the President to furnish all necessary and proper information and reports compiled from records kept during the period of Federal control, and this to be at the expense of the carriers. As a result, as was to be expected, there were voluminous reports required, which took much time and a large force of employees to prepare. The work of compilation was carried forward diligently, and as a result all of the reports and statements called for by the Railroad Administration in regard to settlement matters were finished strictly in accordance with the instructions of the Railroad Administration and promptly filed, so that, so far as it is known to your officers and directors, no delay in settling the affairs of Federal control is attributable to any lack of diligence on the part of the company nor for the want of any necessary information.

During the period of Federal control many things occurred which have had far-reaching effect upon the affairs of the company, the most significant of which was the increase in wages. During the year 1917 the payroll of officers and employees amounted to $47,346,247.29. For the year 1920 it amounted to $100,550,395.72.

During Federal control practically all of the labor not previously unionized became unionized, and there are now, in addition to the brotherhoods of enginemen and trainmen and switchmen's unions, unions representing various shopmen, maintenance of way men, telegraphers, station agents and station employees, freight handlers, etc., and clerks. Some of these organizations are affiliated with the American Federation of Labor and others are not.

In the month of July, 1920, the Railroad Labor Board, a body created by the Transportation Act, 1920, granted an increase in wages applicable to all employees excepting certain subordinate officials and the technical employees of the Engineering Department, which increased their compensation approximately 22%. This increase was made effective May 1, 1920, and due to this award of the Labor Board and other necessary wage adjustments incident thereto, the operating expenses were increased from May 1 to December 31, 1920, $12,421,000. For a full year's operation this award alone requires an expenditure greater than the total of the interest charges for the entire year and the dividends for a half year.

The property, when returned to the Company at the end of Federal control, was not in as good repair nor in as complete equipment as it was on January 1, 1918, when taken over by the Government. The President stated in his proclamation of December 26, 1917, and the Federal Control Act guaranteed that the property would be returned in as good condition as when taken over, and the claim made against the Director General contains the amount necessary to make good the deficiency.

CONSTRUCTION AND MAINTENANCE DURING THE YEAR 1920

Owing to the difficulty of securing material and labor, as well as to the necessity for limiting construction expenditures to the minimum of absolute necessity due to the high cost of labor and material, a very small amount of construction work was done during the year.

Chicago Terminal Elevator.—During the year 1919 an enlargement of the Chicago terminal grain elevator was undertaken, consisting of the construction of seventy-eight bins with interspaces at the storage house, in order to complete the elevator upon the plan originally adopted. This additional construction increased the storage capacity about 3,364,000 bushels, and brings the total capacity of this elevator to 10,000,000 bushels. The erection of the bins was completed and they were put in service on September 1, 1920.

Clinton, Iowa.—During the year 1920 the construction of a modern passenger station and heating plant at Clinton, Iowa, was completed. The station was put in service on May 6, 1920. The work of constructing subways at two streets, and the elevation of the tracks forming a part of the project have been postponed until a more opportune time. The company is required by ordinance to complete one of the subways in 1921, and to complete the other subway and the entire project in 1922.

Hastings, Neb.—A passenger station of brick on concrete foundation with basement to accommodate the steam heating plant was constructed. The former passenger station at this point was destroyed by fire.

Glen Rock, Wyo.—A passenger and freight station of frame construction, with cement stucco finish on the exterior, was completed and put in service. This station was constructed to accommodate a community which has grown rapidly in the last few years.

Ely, Neb.—A passenger and freight station of frame construction, on timber foundation, was constructed and put in service.

Irwin, Neb.—A freight and passenger station of frame construction, on timber foundation, was constructed and put in service.

Franklin Grove, Ill.—A passenger station of concrete tile with brick facing to the level of the window sills and cement stucco finish above, was constructed. The station building formerly located here was destroyed by fire.

Fond du Lac, Wis.—A frame ice house, on concrete foundation and having a capacity of 10,000 tons of ice, with gallery conveyor for filling the house, was constructed. The ice house previously located at this point was destroyed by fire.

Mayfair, Ill.—A one-story freight house, on concrete foundation and supplied with steam heating plant, was constructed. Team yards and tracks were also constructed at this point.

Chicago, Ill.—A two-story brick building was erected at Erie Street coach yard to provide quarters for the storage of material and tools used at this yard and accommodation for employees. The construction of this structure was made necessary on account of quarters previously used having been destroyed by fire.

Ashland, Wis.—An extension 840 feet in length is being made to ore dock No. 3. This extension is of timber construction of the same character as the existing dock, and will add 140 pockets to the dock, making its total capacity 340 pockets. This extension is necessary to take care of the additional ore traffic which is increasing rapidly from the territory served by this dock.

Passing tracks were constructed at the following points:

Burdette, Wis.—Existing track extended 3,100 feet.

Eyota, Minn.—New passing track constructed 5,000 feet in length.

Haverhill, Minn.—New passing track constructed 5,000 feet in length.

Lime Siding, Minn.—New passing track constructed 5,000 feet in length.

Lowden, Iowa.—New passing track constructed 4,800 feet in length.

Nevada, Iowa.—Existing passing track was extended 3,326 feet.

Woodruff, Wis.—Existing passing track was extended 1,913 feet.

Nelson, Ill.—New passing track constructed 2.65 miles in length.

Benld, Ill.—New passing track 1.13 miles in length constructed. At this point, also, tracks aggregating 3.4 miles in length were constructed for the purpose of affording facilities for cleaning and repairing coal cars.

Broadmoor, Ill.—A second main track 2.12 miles in length was constructed.

Hurley, Wis.—A new track 2,290 feet in length, connecting with the Ashland Division south of Hurley Jct. and extending eastward to the mines at Ironwood, Michigan, also yard tracks aggregating 11,060 feet, coaling platform, water tank, yard office, coal and oil house and coal heaver's and switchmen's quarters, were constructed to provide for the serving of the mines, access to which over previously existing tracks was cut off by the mining operations.

Chicago, Ill.—A reinforced concrete viaduct extending across the Wells Street Yard was completed and opened to traffic December 31, 1920. This structure provides an approach to a new steel bascule bridge across the Chicago River built by the City and extending from North Franklin Street on the south of the river to Orleans Street on the north, opening a new street from the loop district to the north side, north of Kinzie Street. The viaduct is 80 feet wide and carries two street car tracks. It has a roadway 48 feet wide and two sidewalks each 16 feet wide, with concrete balustrade. The main viaduct is 610 feet long.

During the year the following important bridges were constructed:

Carrollville, Wis.	Bridge 1516½.	Reinforced concrete subway at American Ave., necessary to provide grade separation.
Ripon, Wis.	Bridge 1013.	20-foot concrete arch and 320 feet of earth embankment, replacing pile and timber trestle.
Bando, Ill.	Bridge 1863.	118-foot deck riveted steel truss span on reinforced concrete abutment and concrete pier, replacing timber bridge.
Fox Lake, Minn.	Bridge 503.	75-foot deck plate girder span on concrete abutments, replacing timber bridge.
Pisgah, Iowa.	Bridge 256.	90-foot through plate girder span on pile piers, replacing timber bridge.
Rochester, Minn.	Bridge 126.	Three 75-foot deck plate girder spans on concrete piers, replacing two steel truss spans of inadequate strength for modern power.
Lamberton, Minn.	Bridge 526.	43-foot deck plate girder on pile piers and present concrete pier, replacing portion of timber bridge.
Fremont, Neb.	Bridge B-8.	Platte River. 7 concrete piers constructed to replace pile piers. Part of program of replacing all pile piers in this bridge when renewal is required.

COALING STATIONS

Modern mechanically operated coaling stations were under construction and partially completed at the following points:

Clinton, Iowa.	Capacity, 350 tons
Carroll, Iowa.	Capacity, 300 tons
West Chicago, Ill.	Capacity, 300 tons

MISCELLANEOUS

Kenosha, Wis.—In connection with the construction by the City of Kenosha of a new bridge over the river at Main Street, the Railway Company is completing the viaduct over the industry track leading to the Simmons Company and the Bain Wagon Company, a viaduct forming a part of the approach to the new bridge. This is about 40 per cent complete.

NEW EQUIPMENT

During the year the Company arranged for the purchase of the following new equipment to be delivered early in the year 1921:

500 Steel ore cars.
500 Steel underframe stock cars.
250 Steel underframe refrigerator cars.
50 Caboose cars.
25 Steel passenger coaches.
9 Steel smoking cars.
2 Steel mail cars.
3 Steel combination baggage and mail cars.
23 Steel baggage cars.
40 Heavy Mikado type freight locomotives.
20 Heavy Pacific type passenger locomotives.

RAIL RENEWALS

The following renewals were made with new rail:

63.25 track miles	100 lb. rail
129.15 track miles	90 lb. rail
60.43 track miles	72 lb. rail
.58 track miles	60 lb. rail
253.41 track miles.	

The following usable rail was applied in renewals:

22.95 track miles	100 lb.
63.29 track miles	90 lb.
50.23 track miles	80 lb.
98.48 track miles	72 lb.
64.79 track miles	less than 72 lb.
299.74 track miles.	

BALLASTING

3.60 miles of track ballasted with crushed stone.
77.48 miles of track ballasted with gravel.
(17.2 miles of the foregoing material was distributed in 1918 and 1919, but not put under the track.)
62.32 miles of track ballasted with cinders, of which 6.5 miles was distributed in 1919, but not put under the track.

TIE RENEWALS

A total of 2,543,892 cross ties and 6,450,951 feet (board measure) of switch and bridge ties was renewed.

PROPRIETARY RAILWAYS ACQUIRED

In conformity with action taken by the stockholders at the annual meeting of April 13, 1920, on April 30, 1920, the Chicago and North Western Railway Company acquired by purchase the railway, property and franchises of the following proprietary companies, which have for many years been controlled by it through ownership of the entire capital stock.

Wyoming & North-Western Railway Company, a corporation of the State of Wyoming, owning a single track railway extending from a connection with the Chicago and North Western Railway at Casper, Wyoming, to Lander, Wyoming, a distance of 147.89 miles.

Pierre, Rapid City and North-Western Railway Company, a corporation of the State of South Dakota, owning a single track railway extending from a connection with the Pierre and Fort Pierre Bridge Railway at Fort Pierre, South Dakota, to Rapid City, South Dakota, a distance of 165.48 miles.

Pierre and Fort Pierre Bridge Railway Company, a corporation of the State of South Dakota, owning a single track railway (and bridge over the Missouri River) extending from a connection with the Chicago and North Western Railway at Pierre, South Dakota, to a connection with the Pierre, Rapid City and North-Western Railway at Fort Pierre, South Dakota, a distance of 1.82 miles.

Belle Fourche Valley Railway Company, a corporation of the State of South Dakota, owning a single track railway extending from a connection with the Chicago and North-Western Railway at Belle Fourche, South Dakota, to Newell, South Dakota, a distance of 23.52 miles.

James River Valley and North-Western Railway Company, a corporation of the State of South Dakota, owning a single track railway extending from a connection with the Chicago and North-Western Railway at Blunt, South Dakota, to a connection with the railway of that company at Gettysburg, South Dakota, a distance of 39.55 miles.

Missouri Valley and Blair Railway and Bridge Company, a corporation of the State of Iowa, owning a single track railway (and bridge over Missouri River) extending from a connection with the Chicago and North-Western Railway near California Junction, Iowa, to a connection with the railway of that company near Blair, Nebraska, a distance of 3.36 miles.

Iowa Southern Railway Company, a corporation of the State of Iowa, owning a single track railway extending from a connection with the Chicago and North Western Railway near Miami, Iowa, to near Consol, Iowa, a distance of 13.77 miles.

Macoupin County Extension Railway Company, a corporation of the State of Illinois, owning a single track railway extending from a connection with the Chicago and North-Western Railway at Benld, Illinois, to Staunton, Illinois, a distance of 4.36 miles.

The De Pue, Ladd and Eastern Railroad Company, a corporation of the State of Illinois, owning a single track railway extending from Ladd, Illinois, to Seatonville, Illinois, a distance of 3.25 miles.

The Albany Railroad Bridge Company, a corporation of the State of Illinois, chartered in 1857, with power to build, maintain and use a railroad bridge over the Mississippi River between a point below Fulton, Illinois, and Clinton, Iowa, a distance of 1.10 miles.

Wolf River Valley Railway Company, a corporation of the State of Wisconsin, owning a single track railway extending from a connection with the Chicago and North-Western Railway near Elton, Wisconsin, to White Lake, Wisconsin, a distance of 1.98 miles.

PENSIONS

The Company has continued its policy of awarding pensions to employees, and during the calendar year 1920, 161 employees of the Company were retired from active service and granted pensions. Of those retirements, 91 were on account of pensioners having reached the age of 70, and 70 were granted on account of employees having suffered permanent physical disability.

On December 31, 1920, there were 1,102 retired employees receiving pensions. The amount paid in pensions during the year was $385,235.42, of which $60,081.47 was paid by the United States Railroad Administration and the balance, or $325,153.95, was paid by the Chicago and North-Western Railway Company. The average monthly pension in force December 31, 1920, was $31.71.

Since the inauguration of the pension system, the total payments made from January 1, 1901, to December 31, 1920, was $3,804,030.38.

FEDERAL VALUATION

The work of valuation of the property by the Interstate Commerce Commission has been carried forward throughout the year. The field work, which was commenced in 1915, and carried on continuously from that time to December, 1920, has now been completed, with the exception of some miscellaneous items, which will be finished during the coming spring. This work is done by the Bureau of Valuation of the Interstate Commerce Commission, but the cooperation and assistance of the Railway Company is required in the matter of furnishing maps and information and the preparation of descriptive statements of the property, detailed statements of the cost of its land and equipment, as well as the rendering of active assistance in carrying out the field work and in the preparation of detailed statements of quantities. This assistance and co-operation have been regularly rendered through the period. It is expected that the work of tabulation and the application of prices and the computations of the various costs, estimates of reproduction costs, etc., will be substantially completed during the year 1921, and that the Commission will be in a position to render a tentative report some time in the year 1922.

During the year 1920, $426,549.25 was expended, of which amount $357,632.44 was borne by the company and $68,916.81 by the Railroad Administration. Since the commencement of this work, $1,740,935.94 has been expended.

RATES

During the period of Federal control, rates were not advanced as the expense of operation increased. Effective August 26, 1920, however, the Interstate Commerce Commission increased the rates on interstate passenger traffic, 20 per cent, and on interstate freight traffic other than ore, from 25 to 40 per cent. Several of the State Commissions declined to make like increases on intrastate traffic, and to secure such increases and eliminate unlawful discrimination between state and interstate commerce, the Company applied to the Interstate Commerce Commission and the Federal courts, with the result that substantially all of the intrastate freight and passenger rates were given the same percentage of increase as was given to the interstate rates.

CAPITAL STOCK

There has been no change since the close of the preceding year in the Capital Stock and Scrip of the Company.

The Capital Stock authorized by the Company is Two Hundred Million Dollars ($200,000,000), of which the following has been issued to December 31, 1920:

HELD BY THE PUBLIC:		
Common Stock and Scrip	$145,157,128.82	
Preferred Stock and Scrip	22,395,120.00	
Special Stock	65,000.00	
Total Stock and Scrip held by the Public		$167,617,248.82
OWNED BY COMPANY:		
Common Stock and Scrip	$2,342,512.15	
Preferred Stock and Scrip	3,834.56	
Total Stock and Scrip owned by Company		2,346,346.71
Total Capital Stock and Scrip, December 31, 1920		$169,963,595.53

FUNDED DEBT

At the close of the preceding year the amount of Funded Debt held by the Public and in Sinking Funds was		$213,125,000.00
The above amount has been decreased during the year ending December 31, 1920, as follows:		
By Bonds and Equipment Trust Certificates redeemed:		
C. & N. W. Ry. 30-year Debentures, 5%	$10,000.00	
M. L. S. & W. Ry. Consolidated First Mortgage, 6%	4,000.00	
M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5%	43,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 5%	80,000.00	
C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%	285,000.00	
C. & N. W. Ry. Equipment Trust Certificates of 1912, 4½%:		
Series A	$300,000.00	
Series B	300,000.00	
Series C	400,000.00	
	1,000,000.00	
	$1,422,000.00	
By Bonds and Equipment Trust Certificates transferred to the Treasury from the Sinking Funds on W. & St. P. R. R. (Ext. Western Div.) and North Western Union Ry. First Mortgage Bonds:		
C. & N. W. Ry. 30-year Debentures, 5%	$46,000.00	
M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5%	22,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 6%	19,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 5%	67,000.00	
Wisconsin Northern Ry. First Mtge., 4%	440,000.00	
C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%	45,000.00	
Mankato and New Ulm Ry. First Mtge., 3½%	416,000.00	
F. E. & M. V. R. R. Consolidated, 6%	1,000.00	
C. & N. W. Ry. Equipment Trust Certificates of 1912, Series C, 4½%	4,000.00	
	$1,060,000.00	
Total Funded Debt redeemed and transferred		2,482,000.00
		$210,643,000.00
And the above amount has been increased by Bonds and Notes sold during the year, as follows:		
C. & N. W. Ry. 10-Year Secured Gold Bonds, 7% (secured by $2,500,000.00 General Mortgage Gold Bonds and $15,000,000.00 First and Refunding Mortgage Bonds)	$15,000,000.00	
C. & N. W. Ry. Equipment Gold Notes of 1920, 6% (secured by equipment allocated to Company by United States Government)	9,973,500.00	
		24,973,500.00
Leaving Funded Debt held by the Public December 31, 1920		$235,616,500.00

BONDS IN THE TREASURY AND DUE FROM TRUSTEE

At the close of the preceding year the amount of the Company's unpledged Bonds and Equipment Trust Certificates in the Treasury and Due from Trustee was		$19,749,600.00
The above amount has been increased during the year ending December 31, 1920, as follows:		
Bonds Redeemed, exchangeable for General Mortgage Gold Bonds of 1987:		
W. & St. P. R. R. (Extension Western Division), First Mortgage, 7%, redeemed	$14,400.00	
North Western Union Ry. First Mortgage, 7%, redeemed	20,000.00	
C. & N. W. Ry. 30-year Debentures, 5%, redeemed	10,000.00	
M. L. S. & W. Ry Consolidated First Mortgage, 6%, redeemed	4,000.00	
M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5%, redeemed	43,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 5%, redeemed	80,000.00	
C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%, redeemed	285,000.00	
	$456,400.00	
C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee on account of Construction Expenditures made during the year	1,000,000.00	
	$1,456,400.00	
Bonds and Equipment Trust Certificates transferred to the Treasury from the Sinking Funds on W. & St. P. R. R. (Ext. Western Div.) and North Western Union Ry. First Mortgage Bonds:		
C. & N. W. Ry. 30-year Debentures, 5%	$46,000.00	
M. L. S. & W. Ry. Extension and Improvement Sinking Fund Mortgage, 5%	22,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 6%	19,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 5%	67,000.00	
Wisconsin Northern Ry. First Mtge., 4%	440,000.00	
C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%	45,000.00	
Mankato and New Ulm Ry. First Mortgage, 3½%	416,000.00	
F. E. & M. V. R. R. Consolidated, 6%	1,000.00	
C. & N. W. Ry. Equipment Trust Certificates of 1912, Series C, 4½%	4,000.00	
	$1,060,000.00	2,516,400.00
		$22,266,000.00
And the above amount has been decreased during the year, as follows:		
C. & N. W. Ry. Equipment Trust Certificates of 1913, 4½%, retired:		
Series D	$400,000.00	
Series E	485,000.00	
Series F	115,000.00	
C. & N. W. Ry. Equipment Trust Certificates of 1917, 5%, retired:		
Series G	422,000.00	
Series H	400,000.00	
Series I	178,000.00	
C. & N. W. Ry. General Mortgage Gold Bonds of 1987, 5% (in Treasury on December 31, 1919), deposited as part security for the C. & N. W. Ry. 10-Year Secured Gold Bonds sold during the year	2,500,000.00	
		4,500,000.00
Total in Treasury unpledged December 31, 1920		$17,766,000.00

In addition to the bonds in the Treasury, as above, the following bonds owned by the Company are pledged as security for the C. & N. W. Ry. 10-Year Secured Gold Bonds sold during the year:

C. & N. W. Ry. General Mortgage Gold of 1987, 5%	$2,500,000.00
C. & N. W. Ry. First and Refunding Mortgage, 6% (issued during the year on account of construction expenditures made during the preceding five years)	15,000,000.00
Total	$17,500,000.00

MILES OF RAILROAD

The total number of miles of railroad owned December 31, 1920, was		8,328.86 miles
In addition to which the Company operated under Trackage Rights:		
Peoria & Pekin Union Railway (in the City of Peoria, Ill.)	2.02 miles	
New York Central Railroad (Churchill to Ladd, Ill.)	2.80 "	
Union Pacific Railroad (Broadway Station, Council Bluffs, Iowa, to South Omaha, Neb.)	8.73 "	
Chicago, St. Paul, Minneapolis & Omaha Railway:		
Blair to Omaha, Neb.	24.70 "	
Elroy to Wyeville, Wis.	22.79 "	
In Sioux City, Iowa	2.28 "	
Illinois Central Railroad (Sioux City to Wren, Iowa)	10.10 "	
	73.42 "	
Total Miles of Railroad Operated December 31, 1920		8,402.28 miles

The above mileage is located as follows:

In Illinois	824.53 miles
" Wisconsin	2,160.12 "
" Michigan	510.90 "
" Minnesota	650.30 "
" Iowa	1,632.55 "
" North Dakota	14.28 "
" South Dakota	1,230.45 "
" Nebraska	1,100.80 "
" Wyoming	278.35 "
Total	8,402.28 miles

LANDS

During the year ending December 31, 1920, 16,396.11 acres and 92 town lots of the Company's Land Grant lands were sold for the total consideration of $877,400.18. The number of acres remaining in the several Grants December 31, 1920, amounted to 268,133.16 acres, of which 42,074.51 acres were under contract for sale, leaving unsold 226,058.65 acres.

The Board announces with sorrow the death, on July 22, 1920, of Mr. William K. Vanderbilt (Senior), who served as a director from September 27, 1884, and as a member of the Executive Committee from June 4, 1891, to the time of his death.

Appended hereto may be found statements, accounts and statistics and the condition of the Company's affairs on December 31, 1920.

By order of the Board of Directors.

W. H. FINLEY, President.

Chicago, April 1, 1921.

PROFIT AND LOSS—DECEMBER 31, 1920

	Cr.
Credit Balance, December 31, 1919	$55,531,371.42
CREDITS FOR THE YEAR ENDING DECEMBER 31, 1920:	
Balance Income brought forward from Income Account (see statement, page 32)	3,633,978.95
Donations	42,279.41
Net Profit from Sale of Land Grant Lands	909,320.46
Amount transferred from "Appropriated Surplus" on account of the retirement of W. & St. P. R. R. (Extension Western Division) and North Western Union Ry. First Mortgage Bonds	2,541,036.62
	$62,657,986.86

Dr.	
CHARGES FOR THE YEAR ENDING DECEMBER 31, 1920:	
Depreciation accrued prior to July 1, 1907, on equipment retired or changed from one class to another	$443,827.05
Net loss on property sold or abandoned and not replaced	181,818.71
Debt discount extinguished through surplus	723,803.35
Miscellaneous Debits (Net)	568,140.01
Balance Credit, December 31, 1920, carried to Balance Sheet	60,740,397.74
	$62,657,986.86

[ADVERTISEMENT]

Railway Officers

Financial, Legal and Accounting

George N. Yard, acting secretary and treasurer of the Gulf, Colorado & Santa Fe, has been elected secretary and treasurer with headquarters at Galveston, Texas.

J. G. Lynch has been appointed freight claim agent of the Louisiana Railway & Navigation, succeeding J. N. Campbell, who has been promoted to general freight and passenger agent, effective May 23.

J. C. Hume, division claim agent of the International & Great Northern, with headquarters at San Antonio, Tex., has been promoted to general claim agent, with headquarters at Palestine, Tex., succeeding J. S. O'Flynn, deceased.

Operating

W. H. Johnson, superintendent of terminals of the Norfolk & Western with headquarters at Norfolk, Va., has been appointed general agent and superintendent of terminals, effective June 1.

Charles M. Shriver, assistant superintendent of the Baltimore terminals of the Baltimore & Ohio, has been promoted to superintendent of terminals to fill the vacancy made by the advancement of F. G. Hoskins to superintendent of the Baltimore division, effective June 1. Mr. Shriver is 28 years old, having entered the service of the Baltimore & Ohio 11 years ago as a machinist helper at the Mt. Clare shops. After serving his apprenticeship, he served as a machinist at the Riverside shops and later was promoted to fuel inspector. On April 1, 1916, he was promoted to assistant road foreman of engines at Cumberland, Md., and, in March, 1917, he became trainmaster of the Philadelphia division. He was later transferred to the Ohio division in a similar capacity. Mr. Shriver was furloughed in July, 1918, for military service, and sailed immediately for France where he served as a lieutenant with the railroad engineers in handling the heavy rush of troops and materials. Mr. Shriver returned from abroad in May, 1919, and resumed his service with the Baltimore & Ohio as trainmaster of the Wheeling division at Wheeling, W. Va. He became assistant superintendent of the Baltimore terminals July 1, 1920, from which position he has now been promoted.

C. M. Shriver

Traffic

C. O'D. Pascault, division passenger agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Pittsburgh, has resigned and the position has been discontinued.

J. N. Campbell has been appointed general freight and passenger agent of the Louisiana Railway & Navigation, effective May 23, succeeding E. C. D. Marshall, deceased.

J. A. Rockwell, general agent of the Buffalo, Rochester and Pittsburgh with headquarters at Rochester, N. Y., will retire in accordance with the pension rules of the company and the office will be abolished, effective June 1.

Robert A. Trovillion, chief clerk to the general freight agent of the Illinois Central, with headquarters at Chicago, has been promoted to assistant general freight agent, with the same headquarters, effective May 21, succeeding H. G. Powell, who has resigned to accept service with the Illinois Terminal Company, with headquarters at Alton, Ill. Mr. Trovillion was born at Golconda, Ill., on August 26, 1887, and was educated at the Western Military Academy, Alton, Ill. He entered railroad service on December 10, 1906, as a stenographer in the office of the assistant general freight agent of the Illinois Central at St. Louis, Mo. During the next ten years, he served in various positions including chief clerk in the St. Louis office, and on February 15, 1916, was transferred to Chicago as assistant chief clerk to the general freight agent. He was made chief clerk to the general freight agent on May 11, 1917. Mr. Trovillion served in the air service of the army during the war, and upon his return to civilian life resumed his position as chief clerk.

R. A. Trovillion

Robert W. Davis, freight traffic manager of the Buffalo, Rochester & Pittsburgh with headquarters at Rochester, N. Y., has retired under the pension rules of the company, effective May 20, and the office of freight traffic manager has been discontinued. Mr. Davis was born at Union Square, Oswego County, N. Y. He entered railway service in 1871 as an apprentice for the Syracuse & Northern (now a part of the New York Central). The following year he became a telegraph operator. In 1876 he was promoted to agent at Union Square. In 1880 he became train dispatcher and night ticket agent at Watertown, N. Y., and, in 1881, traveling auditor. He then served a short time as auditor and assistant treasurer of the Syracuse, Chenango & New York (now also a part of the New York Central). From 1882 to 1884 he served as a train dispatcher for the Rochester & Pittsburgh (the predecessor of the Buffalo, Rochester & Pittsburgh). He then became traveling freight agent and chief clerk in the freight department and remained in the position until 1892, when he was promoted to general freight agent. In 1907 he was appointed freight traffic manager.

Mechanical

E. J. McSweeney, division master mechanic of the Baltimore & Ohio with headquarters at Washington, Ind., has been transferred to Garrett, Ind., succeeding W. F. Moran, resigned. **C. M. Newman** succeeds Mr. McSweeney. These appointments and changes were effected June 1.

Engineering, Maintenance of Way and Signaling

J. J. Desmond, roadmaster of the Louisiana division of the Illinois Central, with headquarters at McComb, Miss., has been transferred to the Chicago Terminal, with headquarters at Chicago, succeeding **P. H. Leonard,** who has been appointed track supervisor, with the same headquarters. **C. M. Chumley,** roadmaster of the Mississippi division, with headquarters at Water Valley, Miss., has been transferred to the Louisiana division, succeeding Mr. Desmond. C. M. Pittman, Jr., succeeds Mr. Chumley. The appointments and changes were effective June 1.

P. G. Lang, Jr., whose appointment as engineer of bridges

of the Baltimore & Ohio was announced in the *Railway Age* of May 27 (page 1252), was born at Philadelphia, Pa. He was educated at the Northeast Manual Training High School of that city and at the University of Pennsylvania, from which institution he was graduated in 1905 with the degree of bachelor of science in civil engineering. During 1905 and 1906 he was employed at the Pencoyd plant of the American Bridge Company. During the latter year he left this company to become bridge designer for the Carolina, Clinchfield & Ohio at Johnson City, Tenn. In December, 1907, he entered the service of the Baltimore & Ohio as assistant engineer in the bridge department. In December, 1917, he was promoted to chief bridge draftsman and on August 1, 1918, to assistant engineer of bridges, which position he held at the time of his recent promotion. Since October, 1919, Mr. Lang has been in complete charge of bridge work for the company.

P. G. Lang, Jr.

Purchasing and Stores

John E. Mahaney, whose appointment as superintendent of stores of the Chesapeake & Ohio was announced in the *Railway Age* of May 20 (page 1196), was born at St. Paul, Minn., December 23, 1879, and entered railway service in the stores department of the Minneapolis, St. Paul & Sault Ste. Marie at Minneapolis in 1895. In 1900 he went with the Eastern Minnesota (Great Northern) as general foreman. From 1903 to 1906 he served the Chicago, Rock Island & Pacific in a similar capacity. He then served the Southern Pacific as storekeeper, leaving that position in 1910 to become general storekeeper of the Oregon-Washington Railroad & Navigation. In 1913 he went with the Spokane, Portland & Seattle as general purchasing agent and general storekeeper. Two years later he became general storekeeper of the Norfolk Southern. During federal control Mr. Mahaney served the Procurement section, Railroad Administration, as supervisor of stores of the Northwestern region. On May 1, 1919, he returned to the Norfolk Southern as general storekeeper, which position he held at the time of his recent appointment.

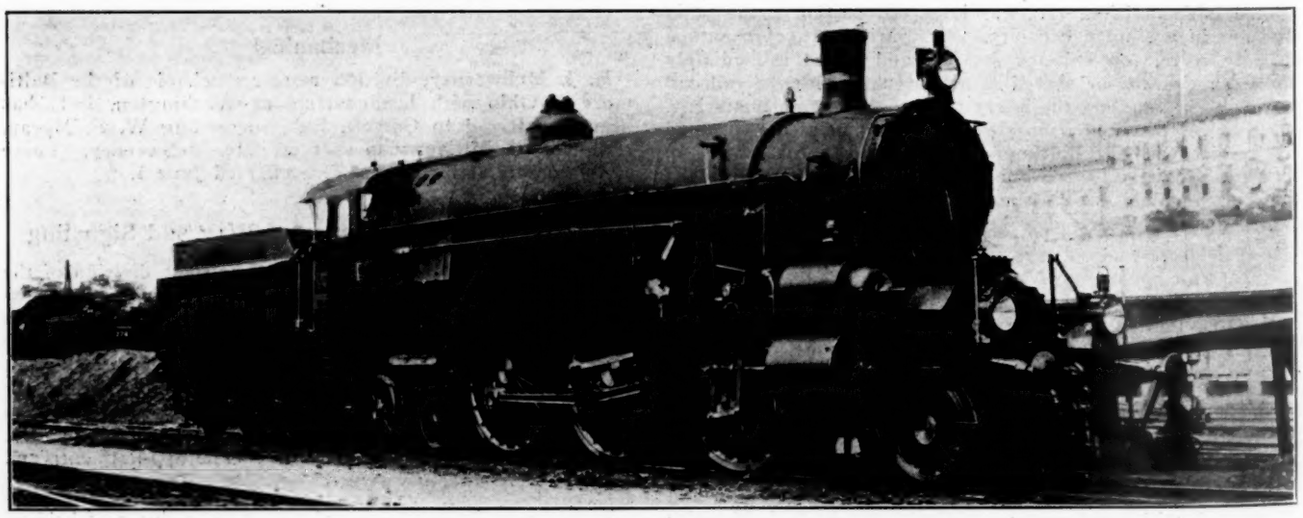
Obituary

F. M. Rugg, general agent, passenger department, of the Chicago, Burlington & Quincy with headquarters at St. Paul, Minn., was killed in an automobile accident near North Branch, Minn., on May 20.

Henry B. Ledyard, chairman of the board of directors and former president of the Michigan Central, whose death was announced in the *Railway Age* of May 27 (page 1252), was born at Paris, France, on February 20, 1844. He was educated at the United States Military Academy at West Point, New York, and entered railway service in January, 1870, in the engineering department of the Northern Pacific. In July of the same year he became a clerk in the office of the division superintendent of the Chicago, Burlington & Quincy, and in 1872 was promoted to assistant superintendent of that road. A year later he was promoted to superintendent of the Eastern division. In October, 1874, Mr. Ledyard was appointed assistant general superintendent and chief engineer of the Michigan Central. He was promoted to general superintendent in 1876, and in 1877, was appointed general manager. Five years later he was elected president of the Michigan Central and served in that position until January, 1905, when he resigned the presidency to become chairman of the board of directors. This latter position he held continuously until the time of his death.

H. B. Ledyard

THE CHICAGO CHAPTER of the American Society of Steel Treating has elected the following officers: Chairman, H. M. Wood, Ingalls-Shepard division, Wyman Gordon Company, Harvey, Ill.; vice-chairman, T. A. Lovegren, Standard Forging Company, Indiana Harbor, Ind.; secretary-treasurer, Harry Blumberg, Illinois Steel Company.



An Austrian Compound, Superheated Passenger Locomotive